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This description of a general program for the preservice preparation of the teacher-innovator, developed as a source of ideas for thinking about and recreating teacher education, is organized into four parts. Part 1 contains introductory chapters which present definitions of terms, a brief description of the program, and general considerations of innovation and change in teacher education. Part 2 includes chapters describing the creation of school-university centers of inquiry (the basic prerequisite of the program); the use of the democratic method and differentiation of instruction (within the concept of group inquiry) as models through which the program is developed; and the development of a contact laboratory for training experiences with children and schools. Part 3 (the body of the report) consists of descriptions of the four basic components (derived from basic teaching processes) of the program: interactive teaching (using teaching strategies and decisionmaking skills); institution-building (developing an innovative organizational climate); innovating (developing teacher spontaneity and flexibility); and continuing teacher scholarship (studying the teaching-learning process and the learning ability of children). Descriptions of possible implementation and evaluation problems and procedures are presented in Part 4. Source papers for each component are included. ED 018 677 is a related document. (SM)

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THE TEACHER-INNOVATOR:
A Program to Prepare Teachers

by

Bruce R. Joyce
Teachers College, Columbia University

New York, New York

October, 1968

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Part I

Matters of Orientation

Chapters One through Four
describe the program briefly
and state its rationale

Chapter One

Prologue and Acknowledgments

This program was developed to be used as a somewhat clumsy heuristic device - an aid to thinking about teacher education. We do not expect anyone (except possibly the principal author) to implement it as it stands, but present it rather as a source of ideas for thinking about and recreating teacher education.

The sources of ideas were many, for the task force was national in scope. A large number of people prepared source papers or gave extensive consultation which contributed to the shape of the program. Several of the papers are included in the body of chapters or as appendices to them.

Drs. David E. Hunt and Edmund V. Sullivan of the Ontario Institute for Studies in Education contributed the theoretical framework for the differential training model (Chapter Seven) and the rationale for studying "The World of the Learner" (Chapter Fourteen) respectively. Their papers appear as appendices to those chapters. In addition, the Flexibility Training Program is based on work originated by Dr. Hunt.

Dr. Carl Weinberg of U.C.L.A. contributed much of the rationale for the Innovator component (Chapter Twelve) and his source paper appears as Appendix to that chapter. Dr. Louis Smith of the St. Louis Regional Laboratory contributed a stimulating source paper on the social system of the classroom (Chapter Ten-D and Appendix Ten-D).

Dr. Greta Morine, formerly of Hofstra University, created much of the simulated school and its decision-making tasks. Her tasks are presented in Chapter Ten-A, much as she wrote them.

Drs. Elizabeth Wilson and George Usdansky, both of the Montgomery County, Maryland, public schools, developed position papers on the creation of the School as a Center of Inquiry (Chapter Eight) and their papers are included.

Dr. Thelma Baldwin developed a position on evaluation, part of which is included in the report, and also provided invaluable general consultation.

Dr. George Brown, of the University of California, Santa Barbara, prepared an imaginative paper on the development of creativity in teaching. His long-time colleagueship has greatly influenced the principal investigator.

Dr. Berj Harootunian of Syracuse University served as consultant and contributed, in person and through his writing, many ideas that appear throughout this document.

Dr. Ole Sand of the National Education Association helped to formulate the framework for developing the inquiry school and strongly encouraged the future-orientation of the program.

Within Teachers' College there were a host of contributors. Professor Arthur W. Foshay shared the problems of thinking through the entire program. Gerald Weinstein contributed the original idea for building a component focussed on the social system of the classroom. Drs. Clark Brown and Katherine O'Donnell developed the 1967-1968 preservice teacher education program into a laboratory that developed and tested many of the elements of the program. The democratic - process model (a student-faculty governed program) was tried, the simulated school tested, and a candidate-operated summer school was presented to city children under the leadership of Dr. Brown and Miss O'Donnell. They showed how to develop a teacher education program as a "center of inquiry."

Professor Jonas Saltis contributed a position paper on the teacher-scholar and valuable consultation to Dean Foshay.

Professor Elliot Avedon developed "The Teaching Game" and contributed a generous helping of imagination to the project.

Professors Joseph Grannis and Dean Robert J. Schaefer participated freely, and the essence of the "School as a Center of Inquiry" is taken from Schaefer's book of that name.

Mrs. Miriam Black and Mrs. Joan Kass served capably as research assistants. They abstracted much of the recent research on teacher education, hunted in the library and the city for data and resources, edited position papers and copy, prepared elements of training components, and generally labored beyond any reasonable expectation.

Mrs. Patricia Kelley coordinated a covey of secretaries and clerical personnel, managed the project office, and somehow got this report typed and duplicated.

The result of the efforts of this large group of people is presented in this report in the form of the "specifications" for a teacher education program. The shape of the program, however, is only one of the many possible combinations of ideas from the contributors. The Flexibility Training sub-component (Chapter Ten-C), for example, was built on previous work by Joyce, Dirr, and Hunt, but it might as well have been developed along the alternative lines proposed by George Brown.

Hence, many of the source papers are included in the report so that readers can look directly at the sources of ideas and spin their own combinations and versions. This report illustrates what can be done rather than what should be done if the teacher-innovator is the goal.

Chapter Two

Definitions: The Invention of Jargon

Because so many of the procedures in this program are somewhat unconventional it seems better to invent clearly defined terms than to use old terms in changed and ambigious ways. The following list should provide the reader with a kind of dejargonization of the document.

Teacher-Candidate.

A student in the program. Sometimes shortened to "candidate" or "teacher" occasionally, the "teacher-innovator."

Inquiry Group.

This is a group of ten or twelve teacher candidates which comprises the basic student unit of the program. At the beginning the program or each year of the program the teacher candidates are organized into inquiry groups which operate essentially as minature democracies which administer the program to themselves.

Feedback Team.

This is a group of four or six students which operates within the inquiry groups in those components that are devoted to skill acquistion or research. (As in the models of teaching component when the students are trying to master a repertoire of teaching strategies.) Members of feedback teams coach each other, using the audio and video tape equipement to help each other to analyze and improve teaching.

Faculty Counselor.

This is the name given to the faculty member who serves as the general adviser or seminar leader for an inquiry group. Different colleges will want to use faculty counselors in various ways. Some will prefer to attach a single faculty counselor to an inquiry group throughout the entire program. Others will want to use a different group of faculty counselors for each sub-component, one of whom is attached to teach inquiry group for the duration of the component.

Steering Committee: Overall

The overall steering committee is a student-faculty-administration-public school-group which is responsible for administration and direction of the program. Each inquiry group would elect a member to the steering committee unless the program is so large as to make that impractical. (For example, a six hindred-student program would involve 50 inquiry groups.) In a program of a hundred students there could very easily be ten or twelve student members of the steering committee. Faculty members should also elect members to the steering committee and also the faculty member who is most closely identified with each component should be attached, ex officio, to the steering committee. The administration will want to make its own determination of membership but it should include at least one member who shares responsibility for policy making within the institution. Local public school systems should determine their own method of selecting representatives, but teachers and community members should be included.

Steering Committee: Component.

Each component also is governed by a steering committee of faculty and students. In a program which extends several years it should include students from each level of the program so that students who have been through the component, others who are going through it and others who have not reached it are included. In a shorter program different arrangements would be made.

Contact Laboratory.

This term refers to provision for candidates to have direct contact with children, whether for observation, teaching, or research.

Non-Contact Laboratory.

This term refers to teaching experiences in which learner or some other aspect of the situation are simulated. Examples are the simulated school in the institution-building and interactive teaching component, and the Communication-Tasks in the flexibility component.

Inquiry School.

Sometimes called the "School as a Center of Inquiry." Refers to a school in which teaching and learning is studied as well as carried on. See Chapter Nine.

Bureaucratic Alienation.

Refers to the disaffection and disorientation that occurs when a committed person enters a profession (or any vocation) and finds that he is required to become a bureaucratic functionary, carrying out routines of the school. Especially, in the case of teacher education, when the apprentice teacher reacts to experiencing the bureaucratization of the school.

Chapter Three

The Teacher-Innovator: A Short Description of a Program for Preparing Educators

by

Bruce R. Joyce
Teachers College,
Columbia University

> The only reason that a teacher should be a person, alive to the things that are, is that he must encourage speculation and lead it. To help a student learn about an unknown and vastly different country requires a medium, a metaphor in which the known and the unknown can meet, each taking meaning from the other, and such a medium is the essence of music, of poetry, of art. Students taught by a real humanist will become real humanists, readers, listeners, men of intellectual and emotional delight, ready for a kind of intimacy with the world which will breed not contempt, but freedom of mind, a way out of the slavery of mere conformism to society.
>
> Ole Sand, Director of the
> Center for the Study of
> Instruction, N.E.A.
> from an address before
> The Tanglewood Symposium,
> Music Educators National
> Conference, Lenox, Mass., 1967.

To prepare a teacher who will be an innovator requires a teacher education program that attends as carefully to his inner resources as it does to his technical competence. Flexibility, commitment, and a secure self-knowledge become as necessary as the possession of a range of powerful teaching strategies and interpersonal skills.

In this document we have described a teacher education program designed to prepare educators who will have the skill and commitment to help create and test out new educational forms. It gives as much attention to the teacher as an institution-builder, as a scholar, and as an innovator as it does to preparing him to work directly with children. Our purpose is to illustrate a process for creating teacher education programs and to provide an example of one which is designed to promote innovation and the scientific study of teaching. We do not expect that anyone will attempt to implement it in the form in which we have created it. We do hope that a few faculties and scholars in the field of teacher education will find our ideas stimulating and useful as they, too, attempt to make teacher education a more powerful force for change and scholarship in education.

At the most general level, the development of new patterns of teacher education is made complex by three factors. For one, it requires the definition of professional competence and the invention of methods for the creation of effective teachers. Second, teacher education is part of an exceedingly diffuse and changing education scene. It bears an uneasy relationship to the ongoing teaching profession because it stands for change, and therefore creates tension within the profession. Yet, its graduates must be able to perform within the existing institutions of the school and to help define current as well as new roles for teachers. Third, professional teacher education is wedded to and is part of the general university education of the student, and in the past it has not very often capitalized on or enhanced that general education. "General" and "professional" education have often, in fact, warred with one another.

Considerations for a Rationale

Change

The first consideration is that teacher education must be rooted in a commitment to educational change. The young teacher needs to be prepared -- not by socializing him to the existing pattern of the school -- but by preparing him to participate in the re-creation of educational forms and substance. Unquestionably, the young teacher needs the cooperation of the existing school if he is to try out new educational procedures. (He cannot have in a kit by his side the computer terminals that he might need to institute computerized instruction. Nor is he able to carry game-type simulations with him wherever he goes, or to become a new type of specialist in a school that does not recognize that specialty.) He needs to know, therefore, not only about the kinds of alternative educational forms that are developing, but what it takes to bring them into existence in the institution or the school.

To fulfill its commitment to change, a teacher education program has to be entwined with schools and clinics where educational experimentation is the norm. The new teacher needs to observe and work with faculties who study teaching and learning - who carry out their work in a spirit of inquiry. He also needs training and support services long after his preservice education has been completed. In fact, the world of education is changing so rapidly that the distinction between "preservice" preparation as a period of intensive training followed by an "inservice" period in which training is less intensive or even haphazard, is not valid. An increasingly high proportion of the "service" will be consumed by re-education and experimentation.

Uncertainty

Another consideration is that the new teacher enters a world in which we are very uncertain about the ends and means of education. Although it will no doubt make him uncomfortable to find this out, the only honest teacher education will be one which confesses to the young teacher from the beginning that he will need to be a participant in the study of education as well as in the process of teaching. He is entering a world in which new alternative models for curriculum and instruction are being created and tested at a very rapid rate. The young teacher might wish that he could be taught the "right" methods or even the "best" methods for accomplishing any purpose, but such certainties are rare. New ways of doing things are being created at an accelerating rate. Also social forces are rendering obsolete many aspects of present-day education and are challenging teachers to create new types of education. The young teacher needs to know how to participate in the creation of new procedures and forms and their incorporation into school life. Consequently, to prepare him to work in a "self-contained" classroom or on a teaching "team" or in any other single model would be mistaken. He needs to be prepared at a more generic level to help create new goals and assemble the means for carrying them out. Perhaps most critical, he needs to know how to train himself for new educational roles.

These demands may seem obvious, but they are surprisingly difficult ones to act upon. Nearly all teacher education programs in the past have been centered around a powerful apprenticeship component whose purpose was to socialize the young teacher to one of several prevailing or new educational patterns. Nursery and kindergarten teachers, for example, have generally been trained to the "Montessori" system, or to the "play-school" theories, or to "academic" approaches. In both student teaching and internship programs the young teacher frequently has learned only to accommodate himself to the existing school, rather than to make independent curricular and instructional decisions that reflect an advanced knowledge of curriculum materials and learning. Hence, it is frequently found at the end of a conventional teacher education program that the young teacher has not been prepared to make decisions concerning objectives or appropriate learning activities. It is necessary therefore to build a program which takes advantage of the virtues of the existing school and which prepares its students to work in them, but which avoids the over-stabilizing effects of student teaching and internship which characterize most present practice.

Scholarship

The present state of knowledge about teaching and learning is such that the teacher who would live rationally must be a competent scholar of teaching and learning. He must be prepared to create and test out original solutions to educational problems. He must create, study, and test curriculum materials. Ideally, he needs to create with his colleagues what Robert Schaefer calls a school that is a center of inquiry.(2) This is the kind of goal that arises from the dilemma of the universities' commitment to the development of rational man. Although it will be extremely difficult to prepare large numbers of teachers who will have the capacity to inquire into teaching and learning, it is essential that the attempt be made. Otherwise, we turn away from the possibility of a reasoned life and a reasoned approach to education. We simply cannot support the conception of a teacher an an applier of formulas.

As roles in education become more differentiated, it will become more possible to prepare teachers for a high level of scholarship. The specialist in computer simulation, for example, will be in a far more manageable role than is the multi-purpose nursery school teacher of today, whose role is too diffuse to permit mastery in performance, let alone scholarship. Teachers with specialties and support systems such as those defined recently by Joyce(3) will be in a position to create new procedures and new knowledge about their effectiveness.

Training Modes

The applications of the cybernetic stance to the problems of training are resulting in powerful new training methods for achieving performance objectives.(4) Within the field of teacher education alone, we have seen the development of "microteaching"(5), integrated

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[2] Robert J. Schaefer. The School as a Center of Inquiry (New York: Harper, 1967).

[3] Bruce R. Joyce. Man, Media and Machines (Washington: National Education Association, 1967).

[4] Karl U. Smith and Margaret Foltz Smith. Cybernetics Principles of Learning and Educational Design (New York: Holt, Rinehart and Winston, 1966).

[5] Dwight Allen, Robert Bush and associates, working at Stanford University. See, for example: Dwight W. Allen. "Micro-Teaching: A New Framework for In-Service Education." High School Journal (May, 1966).

feedback systems(6), the use of simulation techniques to provide decision-making training(7), the development of components to achieve greater interpersonal flexibility in teaching(8) and even the development of programs to increase what is called the "interpersonal strength" of the teacher, or his ability to develop structure in difficult interpersonal situations(9). Plans such as Joyce's(10) for data banks where developmental profiles of the teaching styles of teacher education students are cumulated permit the student and the faculty responsible for his education to obtain a clear developmental picture and to modify the training on that basis. In a similar vein, the studies by Hunt(11) and his collaborators have resulted in the development of differential training models which postulate the types of training suitable for teachers who vary in style and personality. The result of all this work is a solid basis on which to begin to develop performance models for teacher education.

It is still difficult, however, to develop fixed performance models of teaching. Much too little is known about effective teacher behaviors. One cannot, with confidence, develop performance models for teacher education simply by analyzing the functions of present operatives in the classroom. Furthermore, educational technology is changing so rapidly that to build performance models for teacher education around studies of teaching might be akin to basing a driver education program on a study of the horse. Any adequate performance model will describe operatives who function in an emerging milieu which they help to shape rather than under fixed conditions in which their performance can be closely specified.

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[6] Some, as those developed by Flanders, Amedon, and their associates, use category systems. (See: Edmund J. Amedon and Elizabeth Hunter. Improving Teaching (New York: Holt, Rinehart and Winston, 1967) Others use combinations of analytic systems, as: Bruce R. Joyce and Richard E. Hodges. "Instructional Flexibility Training." Journal of Teacher Education (Winter, 1966)

[7] As by Broadbent at Brockport, Cruikshand at Tennessee, Kersh at Oregon, Brown, Kinsey, O'Donnell, and Joyce at Teachers College.

[8] As by Hunt, Dirr and Joyce at Manhattanville College.

[9] As Weinstein, Hunt and their associates at Syracuse University and Weinstein, O'Donnell and their associates at Teachers College.

[10] Bruce R. Joyce and Richard E. Hodges. "The Use of Developmental Studies of Teaching Styles for Research on Teacher Education" (paper delivered to the American Educational Research Association, Chicago, February, 1966).

[11] David E. Hunt. "A Model for Analyzing the Training of Training Agents" Merrill Palmer Quarterly, Winter, 1966.

Complexity

Another consideration is the exceeding complexity of teaching. Teaching is not a single process. Some of the processes of teaching are scholarly in character. (For example, analyzing the modes of inquiry of scholarly disciplines.) Others require great interpersonal capacity. (As working with others to change the character of a school.) Yet others are primarily technical abilities. (For example, diagnosing learning difficulties.) Consequently, the components of a teacher education program will not all look the same. Single methods in teacher education are very unlikely to produce the complexity of competencies that are necessary to the teacher. Some components need the kinds of methods that are characterized by training psychology. Other components require feedback techniques that enable the learner to monitor his own performance. Yet other components should be characterized by scholarly inquiry and still others may involve an almost therapy. The strategies of a sound program will be as multiple as are its components.

Authenticity

To prepare a teacher who studies teaching and learning, who creates and tests educational ideas and forms, we must ourselves create a school which can operate as a "center of inquiry."(12) This must be done to provide the teacher candidate with a model for institution-building -- to give him a concrete example of a community of teachers living as scholar-innovators.

The creation of the school must be done for a second and much more important reason, which is that the people who prepare teacher-innovators must demonstrate that such schools can be developed. If a faculty fails to prove to itself and its teacher candidates that a school as a center of inquiry can be built, then that faculty will lose credibility with its students, and perhaps even with itself.

How did we begin to develop a teacher education program to prepare teachers to shape the future - to create and fill educative roles which do not yet exist? We began by developing a set of hypotheses about the kinds of capacity this teacher would need.

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[12] Robert J. Schaefer. The School as a Center of Inquiry (New York: Harper, 1967).

A RATIONALE FOR TEACHER EDUCATION

In a sense, our primary task was to develop a broad performance model of the professional educator, a structure of teaching(13) that would enable the creation of the ends and the means of the teacher education program. The basis of our rationale stems from the idea that professional performance can be described in terms of control over certain areas of reality that are essential to develop creative roles, rather than the ability to fill already-defined teaching roles. The selected areas of reality would enable the teacher to work as a creator. This conception avoids the problem of developing performance models based on studies of existing functionaries or our limited visions with respect to functionaries for today's schools. The rationale presented herewith represents a stage in the collegiate thinking of faculty members at Teachers College who have independently developed models of teacher education: Bruce Joyce, Arthur Foshay, Gerald Weinstein, Margaret Lindsey and Robert Schaefer. While Joyce's conceptions have structured the writing of this document, the other conceptions have influenced it heavily.

Creativity and Control over Reality

Professional performance in all walks requires control over certain areas of reality. Let us examine architecture for an example. The well-trained architect controls knowledge about engineering, of structural materials of various kinds, the processes of fabricating new materials, of drafting, of decorating, of selecting and designing furniture for various purposes. Equally essential, he controls strategies for analyzing problems of various kinds. He faces design problems, hearing problems, problems of function and space, problems relating to the creation of servo-mechanisms that can support the work of functionaries within an environment. The architect not only has strategies for analyzing problems but he is acquainted with a large repertory of other persons' solutions to those kinds of problems. He therefore controls design techniques. He knows how other people have approached problems of creating areas of quiet in busy places.

Most important, the good architect knows how to learn. In the course of a project, he can actually increase his capacity to perform his work. He learns to identify possibilities no one ever taught him and to solve problems that were not perceived when he was trained. In fact, the more creative he is the more he has to invent ways of learning, of monitoring and increasing his technical competence. Recently, for example, many architects have learned to create computer models of the buildings they design. As they alter their design, they can consult their model and see the implications of, for example, a change in one place, or the stress that is placed somewhere else. The computer model can actually recalculate the specifications for structural members for certain kinds of changes to be made. The men who have learned to do this sort of thing control many areas of reality in such a way that their control increases continually as they see new options within their environment.

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(13) The term is taken from Bruce R. Joyce and Berj Harootunian. The Structure of Teaching. (Chicago, Science Research Associates, 1967).

Let us transfer this conception to the task of developing performance models for teacher education. To do so -- to create a model of a professional who will grow in capacity, create new options for children, and contribute to his profession -- is to identify the areas of reality that he needs to control in order to define and solve educational problems. This is a very different conception of professional control from one which is centered on the training of the present-day functionary. Conceiving professional functioning as the creative manipulation of reality puts future growth in a central position.

The first stage in the creation of a program of teacher education is the identification of the areas of reality which the teacher should control if he is to function effectively with children, create new educational forms and bring them into existence, and participate in the quest for knowledge about teaching. The second stage is the development of curricular systems which will enable teacher education students to achieve control of the essential areas of reality.

The Four Roles of the Teacher-Innovator

We identified four roles which seem essential for the teacher who is an innovator and a scholar. Within each role, certain kinds of control appear necessary.

1. The Institution-Builder. (Shaper of the School). In this role the teacher-innovator works with other faculty members, community representatives, students and administrators to design complete educational programs and organizational structures to bring them into existence. The shaper of the school controls strategies for studying and designing curricula systems; analyzing and creating effective social systems in the school; and assembling and employing technical support systems which facilitate education

2. The Interactive Teacher. The most familiar teaching role occurs during contact with children. At that point the teacher needs strategies for making instructional decisions which are tailored to the characteristics and needs of the students. He can work with groups of children to build effective democratic structures through which they can conduct their education. He controls a wide variety of teaching strategies and wide range of technological assists to education. He is a student of individual differences and he has the interpersonal sensitivity to touch closely the minds and emotions of the students and to modify his own behavior as a teacher in response. He is able to bring structure to chaotic situations without being punitive. The teacher does this in company with his colleagues. He rarely works alone partly because he is more effective when teamed with others but also because he needs their colleagueship and the shared analysis of teaching and learning that is a continuous part of their professional life. With them he controls techniques for designing continual small experiments of teaching and learning.

3. The Innovator. To be an innovator rather than a bureaucratic functionary a teacher needs to combine personal creativity with ability to work with others to build educational settings in which innovation rather than immitation is the norm. He has techniques for analyzing the social structure of the school, especially how it inhibits or facilitates creative behavior.

4. The Scholar. As Robert Schaefer puts it we cannot "wind the teacher up like an old victrola and hope that he will play sweet cerebral music forever." Continuous scholarship renews him and adds to knowledge about education. He controls techniques for studying the processes of interactive teaching and theories of learning. He specializes in one discipline until he knows the nature and the modes of inquiry of that discipline. Equally important, he knows how to engage in research that relates that discipline to the lives of young children. He controls structures for studying the school and for studying teaching and learning, so he can design and carry out educational experiments. He masters a range of teaching strategies derived from different views of learning, and more important than that controls techniques for developing and testing new ones.

The Structure of the Program

These four future oriented roles: the Interactive Teacher, the Institution-Builder, the Innovator, and the Scholar became the sources of the structure of the program. Two frameworks were then developed for the program. One consists of general procedures which unify the program and are shared by all of its components. The second consists of four components, one developed around each of the four roles of the teacher-innovator , and each of them designed to yield control over the areas necessary to that role. The four major components are interrelated and overlapping. They are dimensions of the program, rather than walled-off compartments. Each, however, has its distinct rationale and organization. Let us look first at the general methodology and structure of the program, and then at each of the four components.

The General Methodology and Structure

The basic teaching strategy in the program is "cooperative inquiry."[14] The teacher candidates are organized into democratic "inquiry groups" of about twelve students. These miniature democracies are assisted by faculty counselors who help them to educate themselves. The substantive components have all been designed so that they are virtually self-administering. In no activity is a faculty member more than a seminar leader. The structure of each component is explained to the inquiry group which then, with the help of the faculty, negotiates its way through the activities.

Within each inquiry group the candidates are organized into "feedback teams." Each "feedback team" consists of three or four teacher-candidates who coach each other when they are learning skills to help analyze one another's teaching and to carry out small educational experiments throughout the program. These two units, the inquiry group and the "feedback team," kept together as much as possible throughout the teacher education program so that the members of the group shared the commitment to experimentation that is established at the beginning of the program and to support one another as they stretched themselves into new activities and experiments.

In addition, each inquiry group elects representatives to steering committees of faculty, administration and candidates who are responsible for administering, evaluating, revising the components of the program. An overall steering committee discusses policy matters and can call meetings of all the candidates and faculty when that is desirable.

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[14] See Chapter 10-B for explication of the cooperative inquiry strategy.

The cooperative inquiry method, combined with the democratic organization of the program, accomplishes three purposes:

1. It teaches the teacher candidates how to organize an educational program that operates as a democracy. Hopefully, there will be reasonable transfer to their teaching situation.

2. It involves the teacher candidates in continuous experimental activity which is supported by a group of their peers. This group eventually can function as a reference group, anchoring the experimental norms for each member.

3. It involves the teacher candidates in the shaping of their own educational activities which should be a highly motivating activity. There are good odds that the students will become welded into a tight community, an experience which should have personal value as well as increasing the effectiveness of professional education.

THE CONTACT LABORATORY

The second general structural element in the program is the contact laboratory, which refers to provisions for the teacher candidates to be in contact with schools or children. After an initial period of apprenticeship in the normal public school situation, the contact laboratory does not use any or employ any experiences which are analogous to those which usually characterize student teaching. Contact is provided, however, in order to give the teacher candidates the opportunity to study schools, teachers and children, and also so that they can master a wide repertoire of teaching strategies, practice making curricular and instructional decisions, and engage in educational experimentation.

At Teachers College we have found it possible to provide much of the contact by organizing the candidates to offer educational programs to neighborhood children. There is a great demand for "remedial" programs in all school subjects, and for "enrichment" programs as well. Both after-school programs and summer programs are possible. By offering such programs the candidates both serve the neighborhood and create a contact laboratory, for themselves, in which frankly-experimental teaching can be the norm.

After substantial training, preferably in small-group teaching in their own "school," the teacher candidates are attached to teams in the Inquiry School in order to carry out fairly lengthy experiments. Finally, they are placed in public schools as interns, preferably in assignments where three of them cover the normal duties of two teachers, so that the three can work together continuing to carry out experiments. (It probably should be noted at this point that we take the view that all teaching is an experiment and that the only honest appraoch to teaching is to treat each educational activity as the testing of a hypothesis about teaching and learning.)

The contact laboratory is best described as six phases, each of which serves the four basic components in particular ways, often serving two or more components simultaneously. Briefly, these are:

Phase	Type	Purpose
Phase One	Experiencing the School.	A four to eight week apprenticeship to a public school.
Phase Two	Small-Group and Tutorial Teaching (Preferably in Candidate-Operated Program).	Ten to Twenty Weeks of experimenting with teaching strategies.
Phase Three	Unit Experimentation in Inquiry School.	Group experiments in teaching units taking four to eight weeks.
Phase Four	Experience in Curriculum Modes in Inquiry School.	Observation-Participation Experience in a variety of Ways of Teaching.
Phase Five	Carrying on an Educational Program.	Inquiry groups develop and carry on a Candidate-Operated School Program.
Phase Six	Internship	Paid Teaching, preferably in teams derived from Inquiry Groups.

The contact laboratory begins in the first weeks of the program and continues, ideally, into the first year of paid teaching. Only the initial phase includes apprentice teaching of the type most familiar in traditional student teaching programs. The remainder of the experience is in experimental teaching in which the candidates are mastering a variety of strategies and carrying out teaching units which they develop with research designs.

The Differential Training Model

The third structural element is a model for individualizing instruction which is based on the work of David E. Hunt of the Ontario Institute for Studies in Education. Hunt has taken the position that an optimal educational environment can be prescribed for individual teacher candidates which function in two ways. First, it will increase the learning of ideas and skills. Second, it will increase the personal flexibility of the teacher candidate. Hunt's model provides for modification of educational procedures to take into account four characteristics of the teacher candidate: his competency level, feedback preference, value orientation, and cognitive structure. All of these characteristics are related to achievement by the teacher candidate and cognitive orientation is related to personal flexibility.

The components are organized so that pacing by competency level is accomplished in the skill areas through procedures that the candidates administered directly to themselves. For example, a candidate needs to practice a teaching strategy only until he has mastered it and the means for determining mastery are built into the component in which teaching strategies are the central concern.

The other aspects of the differential model are carried out by the action of the faculty member as he works with the inquiry group. Basically, he modifies his role in order to change the educational environment that is presented to the candidates. With respect to feedback preference, for example, the faculty member modifies his behavior so that candidates who prefer feedback from authority figures receive much from him or other faculty, whereas candidates who prefer peer feedback receive less authority feedback and greater measures of peer judgment.

With respect to cognitive orientation, the faculty member modifies the amount of structure and task complexity that is presented to the teacher-candidate. For example, candidates of low cognitive complexity operate best in environments which are fairly well structured and in which task complexity is not too great. Highly complex individuals, on the other hand, operate best under low structure and high task complexity. Hunt's theory suggests (and he presents much research to bear him out) that when there is a substantial mismatch between cognitive complexity and the environment that the individual not only does not achieve as well but he also is unlikely to grow in flexibility. An optimal environment for growth in flexibility is one in which the amount of structure is somewhat less and the amount of task complexity is somewhat greater than what is optimal for achievement. In other words, a slight, controlled mismatch has the effect of pulling the individual toward ever increasing cognitive complexity and flexibility.

The General Methodology Summarized

The program, then, is operated as a democracy with small self regulating units of students monitoring their own progress and administering the program to themselves with the assistance of faculty counselors. The faculty counselor modifies his role to provide an optimal educational environment for each individual according to the differential training model. The contact laboratory is organized to provide the teacher-candidates with opportunities for study, micro-teaching, and experimentation rather than to socialize them to the school as it presently exists. The contact laboratory stretches over a long period of time in order to insure the development of realistic skills, but it is carefully designed to discourage the teacher-candidates from believing the "realism" means accepting the school as it is today and keeping it the same.

The Four Components

As mentioned earlier the components are really dimensions of the unified program. The contact laboratory serves all four components, sometimes through the same activity. The descriptions which follow are telescoped greatly to give a general idea in a minimal space. Several stages within a component have often been combined into one for the sake of brevity, and the rationale and actual training techniques are only hinted at.

The Teacher as an Innovator

This component is developed from a thesis developed by Weinberg and presented in a source paper prepared as the program was being developed. Weinberg begins with the thesis that the school as we presently know it is a bureaucracy and that the roles of a teacher, like all bureaucratic roles, represent stabilizing forces in the institution rather than forces which encourage change and adaptation to the individual. The average teacher engages in much routine activity and even teaches in certain ways and with some methods simply because they have "always been done." Moreover, deviation from these routine patterns of behavior is quickly questioned and sanctioned. As the novice teacher learns the bureaucratic roles within the school he suffers great alienation because he comes to recognize that many of the things that he is going to do as a teacher are not educative for youngsters so much as they serve to maintain the bureaucracy. He can resolve his conflict by leaving the school (which many young teachers do) or by accepting the bureaucratic roles and thus alienating himself from teaching (which many apparently do), or he can learn to understand the bureaucratic forces and develop his capacity to create authentic teaching roles and even engage in innovative activities through the school. This last course is the purpose of this component.

The component begins by exposing the student to the school as an apprentice and permitting him to learn whatever roles are given to him by the teachers to whom he is apprenticed. As he learns the bureaucratic roles, he will experience alienation. He is helped to analyze both the bureaucratic process and the feelings of alienation which he is having. He studies the social system of the school and the ways in which it stabilizes itself and prevents change and innovative activity from coming about.

From that point, he works in a group carrying out exploratory and experimental teaching strategies. This group (the inquiry group) will hopefully become a reference group for its members- a group whose norms are those of experimentation and innovation. In the common cause they will support each other and help each other anchor the commitment to change and experimentation. When the inquiry creates its section of the remedial and enrichment school they study how to teach in non-bureaucratic ways and how to build a community of teachers and students devoted to authentic and personal learning experiences. Throughout the intern period every effort is made to keep this inquiring group together and in contact with one another so that when they experience resistance to scholarly teaching and innovative activity their solidarity will bolster them.

The Interactive Teaching Component

It is in the area of interactive teaching that the most precise level of competence must be reached. To begin with, the professional self-concept of the teacher depends on his belief in his capacity as an interactive teacher. No matter how well he is able to build institutions and study education, he will not feel "authentic" or adequate unless he knows he can "teach" well. Then also, performance in today's schools depends largely on competence in face-to-face teaching. The teacher must be able to weld groups of children into communities of learners and needs to command a range of teaching strategies which induce many kinds of learning. In addition, only a very high level of technical competence enables innovative activity. An awkward or inept teacher would have serious limitations as an innovator, to put it mildly.

Hence, this component is the most precise and requires the most definite standards of performance. Four sub-components focus on different aspects of teaching. One focuses on instructional decision-making, another on mastering teaching strategies, a third on developing flexibility and sensitivity to learners, and the fourth on developing a social system in the classroom.

Instructional Decision-Making

This sub-component is designed to teach the teacher candidates a range of strategies for making instructional decisions. Work begins with "The Teaching Game," a lively game-type simulation which confronts the candidates with several general principles, e.g., that teaching strategies have differential effects, that several aspects of the environment affect the learner, and that there are several defensible theories of learning which relate to different kinds of educational objectives.

The next phases of the component take place in a simulated school which consists of three elements: a set of data banks on many aspects of fourteen children (including test and observational data, samples of written work, expressions of attitudes, family experiences, etc), data on three communities (Spanish Harlem, a New England town, an English town), and a set of decision-making tasks. The tasks bring the candidates into contact with common teaching decisions, and lead them to the study of decision making strategies. (They examine strategies based on psychological theories [see the next section] and strategies within the area of their specialty [as social studies or science teaching]). From that point the candidates, working in feedback teams, practice making decisions and carry them out. The tutorial-small group phase of the contact laboratory is the setting. Each member of the team practices making and carrying out decisions and evaluating the results.

The remainder of the component takes place during the "unit experiment," when the inquiry group plans and teaches a four to eight week unit in their specialty, building and testing teaching strategies and instructional materials.

Throughout, the activities stress making decisions in terms of testable hypotheses -- that certain procedures will affect particular learners in such-and-such a way. Thus, instructional decision-making is seen as the tailoring of teaching strategies to the student, and testing the effect of the strategy.

Models of Teaching.

The general goal of the "Models of Teaching" sub-component is the mastery of a range of teaching strategies, each derived from a theoretical position on teaching and learning, and the ability to create and test strategies tailored to individual students.

The component begins with practice, in small-group teaching situations, of four basic teaching "moves" or maneuvers. (One to induce productive thinking, a second to produce achievement, a third to structure procedures, and a fourth to induce students to structure procedures themselves.[15]) These moves are generally useful teaching behaviors that begin the teacher's ability to carry out a number of strategies. Teacher candidates, working in feedback teams, practice the moves, coaching one another with the aid of audio and video-recorded teaching episodes.

In the next phase the teacher candidates, using the same techniques, set about the mastery of nine basic teaching strategies, each developed from a theoretical position on learning, and which, together, constitute a fundamental repertoire. Included are: an inductive strategy, a cooperative-inquiry approach, non-directive teaching, an advance-organizer strategy, inquiry training, operant-conditioning, and concept-attainment. All are widely useful.

In the remaining phases, candidates develop or adapt and subsequently test a variety of strategies. They try out the most common strategies in the field of their specialties. They develop strategies for the "unit experiment" and, from that point on, the models of teaching sub-component merges with the instructional decision-making sub-component.

Flexibility Training: Reaching the world of the learner.

While a teaching strategy is a theoretically-based guide for teaching and curriculum-making, it should not operate as a juggernaut, rolling over the students, regardless of how they respond to it. Strategies should be reshaped as the child reacts (or fails to react) to them. Sometimes a strategy should be discarded entirely, and a completely different appraoch begun. Often, indeed, teaching should begin, not with a strategy, but from an encounter between the world of the student and the world of the teacher. To modify his strategy, to reach into the world of the learner and teach directly to him the teacher needs to behave flexibly. Flexibility is required to adjust teaching to the competence of the learner, to his preferred modes of working to ensure that the procedures enhance his feelings about himself, to build concepts between the learner and what is to be learned, and to accommodate an emotional reaction to the material. Flexibility training refers to the attempt to help the teacher become more sensitive to the world of the child, particularly to the ways that the child processes information about the world and reacts emotionally to encounters with it. Included in flexibility is the capacity on the part of the teacher to modify what he is doing in order to accommodate to the system of the learner. (For example, if the learner is very rigid in interpersonal relations he will betray this in many ways. The sensitive teacher will be able to pick up the cues to identify the rigidity and will modify his approach either by working with the youngster so that the rigidity is no great handicap to him, or by modifying his procedures so as to try to lessen the rigidity itself.) These processes (entering the world of the learner and modulating teaching activity to "fit" or capitalize on the learner's world) comprise flexibility in teaching.

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[15] See: Bruce R. Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967). Chapter Three, for a description.

Hence, flexibility, or the lack of it, is very much a part of the ongoing flow of interactive teaching. And -- it is a very complex part of teaching. The behaviors of a student which gives us clues to his ways of organizing the world accrue quickly and are ephemeral. They occur in a setting where many learners are usually present and each learner behavior (voice, expression, gesture) is only one of a number which might be interpreted by the teacher. For a teacher to take in the behavior of a group of youngsters, figure out their ways of looking at the world, and to modify his behavior appropriately is quite a feat. Yet, if the teacher is not flexible, teaching can become detached from the students, lessons can miss the mark, and disaffection can occur between teacher and his student. Teaching requires continuous small adjustments of technique, personality, and pace. Flexibility is central to the process.

In the opening stages of the flexibility training component the teacher-candidates study children (the members of their small-group class) using procedures (developed by Ruth Formanek[16]) which are designed to sensitize the teacher to "coping" behavior by children and to the point of view that every student behavior has significance.

Then, they engage in teaching-situations called "communication tasks" in which they teach children or adults who play a particular role which relates to the objectives of the lesson. The roles are contrived so that the "learner" gradually reveals to the teacher a competency level, affective state, or cognitive orientation. Success in the task requires that the teacher figure out the characteristics of the learner and modify his strategy to take the learner into account. The teacher-candidates practice in communication tasks until they are able to diagnose learner characteristics easily and modify their teaching accordingly.

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[16] Ruth Formanek. "Course Outline and Workbook for Elementary Education 105." Department of Elementary Education, Hofstra University, 1966.

From this point the training moves to the contact laboratory, with candidates applying the same "learner-diagnosis, teacher modulation" procedures, coaching each other and exploring ways of matching teaching to learner.

The Social System of the Classroom

One of the most important aspects of interactive teaching is helping the children develop a social system and a sense of community. Even a group of youngsters who work together on a short project need to develop a rapport and modus operandi that enable them to work and grow together. A classroom group which works together for a year or more has an overpowering need for community.

Many teachers have great difficulty establishing an effective social system, especially in inner-city classrooms. This dimension of interactive teaching is so complex and difficult that this special sub-component has been devised to ensure that a significant effort is made to help the teacher candidate develop the understanding and skill which is necessary if he is to build strong and effective communities of children.

Until the last few years there has been altogether too little attention given to the development of strong training programs in this important area, although many educational theorists and research scholars have stressed its importance in the educational process. In Chapter Four of Bruce Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967). there is an extensive review of research and theoretical positions in this area. This review will not be repeated here -- it will be assumed that the importance of the area is obvious and that the reader has acquainted himself with the important literature in the area.

The general purpose of the sub-component is to provide the teacher-candidate with techniques for analyzing the social system of the classroom and to provide him with techniques for developing a stable, cooperative, person-oriented social system in a classroom, even when starting from chaotic conditions.

The component begins with the analysis of classrooms, using techniques developed by Louis Smith[17] to analyze activity structure and social dynamics and to identify tasks involved in establishing a cooperative social order.

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[17] Louis M. Smith.

In the next stage the candidates analyze the social aspects of teaching strategies (amount of structure and training for roles as learners) and experiment with varieties of strategies, studying the effects on the social behavior of the children. They proceed to experiment, diagnosing the needs of the children, selecting a strategy, and analyzing the effects. (In an unruly group, for example, they might decide to institute a structured social situation, select a highly-structured strategy, and observe the effects on disruptive behavior.) Using audio and television tape, feedback-team members coach each other until each can develop structure and provide role-training at will.

In the candidate-operated school the next stage involves the planning of the social system by the inquiry group, the development of a strategy for achieving it, and testing of the strategy.

This training is continued during the internship phase as needed. Candidates who have difficulty in this area, for example, will continue practicing until they can comfortably train children to a cooperative social system.

The Institution-Builder

Teaching is a large-scale social enterprise. The school as an institution is an effective educational force in its own right. Moreover, the character of the school greatly affects what the individual teacher can do. When it comes to innovation and scholarship, the institution is all-important.

Hence, an extensive component is devoted to the processes of creating institutions.

In the simulated school the candidates practice institutional decision-making and concurrently study strategies for developing the curricular, technological, and social systems of schools.

In connection with tutorial and small-group teaching, they study and test curricular strategies within the areas of their specialty.

Then, as they develop the candidate-operated school, they practice institution-building -- planning and testing out curriculums, interpersonal climates, and support systems.

In the Inquiry School they study the institution-building techniques used there, especially the arrangements that permit scholarship and experimental teaching.

Finally, their internship is organized in groups which try, within more common school settings, to carry out teaching as an experimental activity.

The Teacher-Scholar

We make the assumption that all teachers should be specialists, both academically and pedagogically, but in addition provision is made to teach him theories and systems for studying the school, teaching, and learning.

Two extensive sub-components extend throughout the program. One concentrates on the study of children and the other on the study of teaching. Each alternates theoretical and experimental activities. The sub-component on the study of teaching illustrates:

The activities begin as the candidates start their small-group teaching. Working in feedback teams, they begin to analyze their teaching behavior using the Bellack, Flanders, Gallagher-Aschner, and Joyce systems, each of which analyzes teaching from a stance that illuminates teacher and learner in a distinctive way.

Then, the candidates construct small studies of teacher-learner interaction, generating the studies to: help themselves study particular techniques of teaching, study their own progress toward mastery of moves and strategies, and develop experiments on the responses of children to teaching behavior.

The above activities are quite obviously integrated with the other components and provide one basis for the scientific study of teaching.

The other sub-component, focussing on the study of cognitive and affective development in children, is similar in format except that it equips the teacher to study the child and assay the effects teaching has on him.

Summary

The activities of the teacher-innovator program, then, involves the teacher candidate in continuous experimentation. He studies institution-building and subsequently experiments with the strategies he learns. He masters teaching strategies and experiments with them and others he creates. He studies his own teaching and tests its effects on children. He works in a School as a Center of Inquiry where teaching-scholarship is the norm, and he develops and offers his own educational programs to children.

If the program succeeds, it will be because the inquiry groups become reference groups which continue to have significance in the teacher's life long after he graduates and which urge him to innovation and scholarship. If the democratic organization of the program is implemented vigorously, then the program will change rapidly, will be different for each inquiry group, and will require the faculty to reeducate themselves continuously. If enough inquiry-centered schools are established, the entire program can take place in them.

Chapter Four

The Teacher-Innovator: General Considerations and Rationale

The program is geared to the notion that the schools we see before us today will not long be with us but will be recreated. Part of the rebirth will be by graduates of these very teacher education programs we now seek to reform, for teacher education is in a real sense the midwife of educational change. As a result this program places heavy emphasis on the teacher as a person who participates in the creation of new educational forms. He is seen as both an innovator in his own right and as a faculty member in a school which is continuously recreating itself. Much attention has been paid in this document to the development of several schools which can function as laboratory centers in which the new teacher works with older teachers to create and recreate better means of educating their students. Throughout the program the laboratory experiences are carried on in this spirit. The teacher candidate begins by learning ways of analyzing teaching and schools. He proceeds to learn models of teaching and teaching strategies which are based on theoretical positions on learning. He then begins to create teaching strategies on his own and tries them out with his fellows, studying the results. He engages in training designed to increase his flexibility and creativity. He learns to create new modes of education and to study them. The program is doggedly future-oriented. Its graduates are oriented toward the emerging school in a changing world.

The Context of Teacher Education

Despite the fact that teacher education must now be future-oriented and prepare people who can help create the educational institutions of the future, its graduates must be able to perform within the existing institutions and to help define presently practical as well as new roles for teachers. This is one of the riddles in all fields of professional education. It requires that the preparation of the new professional help him operate both as an innovator and at the same time help him to relate coherently to the profession as it is when he enters it. It is to the solution of this riddle that this program is dedicated.

The Commitment to a Teacher-Innovator

The development of this model is rooted in the conviction that the schools and teachers of today need to devote a significant portion of their energy to the creation of educational forms and methods that will more adequately serve our nations and its young people than do the institutions and methods of today. The goal of this model is to prepare a teacher who will be an evolutionary in the schools of today. He will be developing a new education even while he executes the old. Several developments make this necessary, this commitment to change, even if it were not the product of analysis and ideology.

The New Institutions Require Innovation

We are seeing at the present time the creation of very new kinds of places for educating children. Our present educational forms were developed when the textbook and the fixed course of study were the preferred way of preparing young people. We are now seeing in our society a shift away from the commitment to education as preparation for later schooling and vocational roles toward a belief in education as the gateway to new horizons, both personal and social, for people of all ages. To expand our possibilities so that we live more fully and help develop common consciousness of humankind is the challenge of our time. In a practical sense it has been signaled by the proposal of the superintendant of schools, in Philadelphia, Pa. (Mark Shedd) who has suggested that his city should make itself the setting for secondary education, rather than developing a traditional high school. The art museum would become the setting for art instruction, the library for eading and independent study, the natural history museum and parks for the study of nature, the industries for the study of industry, and social institutions for the study of the social institutions. The literary figures of the city would assist in the study of the creative writing and literature, government officials and private political groups would assist in the political education of the young. New technologies would mediate independent instruction. Self-instructional courses consisting of lectures would be taped and made available so that the student could play them to himself on his own tape recorder or see them through television tape. Students would go to skill centers for diagnosis of their basic skill needs and would be taught how to teach themselves, using self-instructional materials or personalized methods created for their own particular sets of needs and personality.

Whether or not Mark Shedd's set of ideas for the creation of new institutions become reality in the form described above, they are precursors of what will come in general.

The product of this teacher education program must be equipped to help work out the details of such new institutional forms. He should not be tied to the existing institutions of education.

The Emergence of New Teacher Roles and Differentiated Ones

Along with the creation of new institutions we are seeing the creation of new teacher roles. With the introduction of teacher aids into the classroom the teacher becomes the manager, helping groups of professionals carry out a wide variety of functions. As subject matter becomes more rigorous, elementary school teachers are becoming more specialized in terms of the disciplines. As we are beginning to see more possibilities for the education of the very young we are creating an enormous demand for a very large quantity of teachers who can work with children as young as two and three, but who need the same intellectual training as teachers who work with older children.

We are ending the divorcement between early childhood education and the education of older children, adolescents, and adults.

New Technologies

The rapid development of educational technologies is also creating new roles. These are so well known that it does not seem necessary to give them detailed attention here. There is an explosion of individually prescribed instructional materials, computer assisted instruction, materials for carrying on scientific inquiry, human relations techniques, personal counseling techniques, television and film, and vast development of teaching strategies of many kinds brought about by applying cybercultural methods to education. The schools are responding to the technological revolution more rapidly than teacher education. Several schools are already employing experts in simulation techniques. Some school districts have staffs who specialize in television instruction and the use of other media.

A most important effect of the new technologies is that they are interacting with other efforts to create new institutions. It is now possible to have self instructional materials in many many areas available to youngsters on demand, so that a student will be able to elect automated courses at their option. Teachers are therefore freed to use themselves in creative ways and to help children in areas we have heretofore neglected. For example, the teaching of creative writing has always lagged in the elementary and secondary schools of this nation. As machines do what Harold Goces calls "the dirty dishes of teaching," teachers will be able to devote the personalized attention that is necessary for that kind of instruction to be carried on. Seminars will be created around the social issues of the time and the philosophical questions across eras.

The Teacher Innovator

The creation of new institutions, new teacher roles and new educational technologies are interacting together to give us many more options for the future than we have had in the past. The broader participation by members of the community and the development of new institutional forms enable us to make our main business the creation of a unique social institution that will reflect the needs and desires of the community members and the enormously greater technical competence of the educators.

Hence, we are coming into a period when the teacher will not go through his entire career in the comfort (and stagnation) of an unchanging social institution. In 1900, a teacher was able to graduate from a normal school, take a job, and to spend forty-five or fifty years of her career in classrooms that were almost identically equipped. The motion picture came in, but she did not use it much nor was it required that she do so. Television appeared but there were no televised courses that required her attention. She worked in a social institution that did not change in any essential way throughout that entire time. Because that institution did not change it slowly became irrelevant to its society and to its young people. By the time that teacher retired the prestige of the school and the prestige of the teacher were gone in large measure. The institution was being blamed for our scientific failures, our failures in the cold war, our failures to prepare young people for college, and failure to teach children even to read. In these last two cases the criticisms ran counter to the demonstrative facts, but the criticism was as severe as it was in the other areas.

The graduate of today who teaches forty-five years will see his role transformed innumerable times in that span. At some point in his career he may teach entirely over television. At another point he may work entirely as a creator of written materials for children. At yet another point he may be a director of a computer-based instructional center. If the Teacher-Innovator program is successful he will be able to teach himself those new roles, to help shape the institutions in which he will work, and to test out many new educational ideas.

Making Operational the Commitment to Change

In this program the development of the Teacher-Innovator is achieved in three ways:

Some components help by giving the teacher the technology for change. They prepare him to shape the school to make and carry out instructional decisions and to employ and test out contempory technological assists to human behavior.

Other components help by working to commit him to the role as an innovator. Throughout the program he works with groups of his peers and faculty members making and testing out new educational forms and methods. The entire mode of operation of the program is designed to envelop him with a community in which he will be part of an innovation team from the time of his admittance to the program.

The third way this program fulfills the commitment to change is by its attempt to bring about the emotional preparation for innovation. It tries to teach the young teacher to understand the problems of changing the social institution, the emotional hazards of doing so, to help him cope with his own feelings of anxiety and alienation. Without preparing him emotionally we should not be fair to him, for to commit a person to change is to expose him to uncertainty and anxiety. To do that without preparing him to cope with it would be a cruel thing. As a result we give as much attention to the teacher as a person, as we do the teacher as a technologist.

Considerations for a Rationale

Change

The first consideration is that teacher education must be rooted in a commitment to educational change. The young teacher needs to be prepared - not by socializing him to the existing structure and form of the school - but by preparing him to participate in the re-creation of educational forms and substance. Unquestionably, the young teacher needs the cooperation of the existing school if he is to try out new educational procedures. He cannot have in a kit by his side the computer terminals that he might need to institute computerized instruction. Nor is he able to carry game-type simulations with him wherever he goes, or to become a new type of specialist in a school that does not recognize that specialty. He needs to know, therefore, not only about the kinds of alternative educational forms that are developing, but what it takes to bring them into existence in the institution or the school. Beyond this, he needs to have the opportunity to work where innovation is the byword.

A teacher education program has to be entwined with schools and clinics where educational experimentation is the norm, and where the teacher receives training and support services long after his preservice education has been completed. In fact, the world of education is changing so rapidly that the distinction between "preservice" preparation as a period of intensive training followed by an "inservice" period in which training is less intensive or even haphazard, is not valid. An increasingly high proportion of the "service" will be consumed by re-education and experimentation.

A teacher education which would prepare teachers not simply to carry out present educational practices but to create new ones or assist in their implementation must satisfy the following conditions: In the first place it must bring teacher-candidates and in-service teachers together in educational experimentation. The program will not succeed if it simply pits "the new ideas" of the new teachers against "old ideas" of the in-service teacher. Most educational innovations cannot be accomplished by teachers working alone. They require institutional change and institutional commitment. Therefore, the school and the school district are really the units of cooperation with the teacher education program. And within schools devoted to scholarship and innovation experienced teachers and teacher-candidates can work together in joint inquiry. The second condition is that the creation of a innovative teacher education program requires the simultaneous creation of innovative schools. In the inner-city, for example, one cannot simply prepare young innovators and then send them into the existing ghetto schools to let them do the changing of those schools. The city, the college, the young teacher and the in-service teacher, the community, the student body of the school, the teachers union, and the administration of the city public schools have to join together to sanction the creation of a new type of social institution within the ghetto. Anything short of this, is simply to prepare the new teacher for disillusionment.

Uncertainty

Another consideration is that the new teacher enters a world in which we are very uncertain about the ends and means of education. Although it will no doubt make him uncomfortable to find this out, the only honest teacher education will be one which confesses to the young teacher from the beginning that he will need to be a participant in the study of education as well as in the process of teaching. He is also entering a world in which alternative models for curriculum and instruction are being created and tested at a very rapid rate. The young teacher might wish that he could be taught the "right" methods or even the "best" methods for accomplishing any purpose, but no such certainties exist. New ways of doing things are being created at an accelerating rate and if the young teacher is to be effective he needs to know how to participate in the selection of these things and their incorporation into school life. Consequently, to prepare him to work in a "self-contained" classroom or on a teaching "team" or in any other single model would be mistaken. He needs to be prepared at a more generic level so he can help create new goals and help assemble the means for carrying them out. Perhaps most critical, he needs to learn to train himself for new educational roles.

These demands may seem obvious, but they are surprisingly difficult ones to act on. Nearly all teacher education programs in the past have been centered around a powerful apprenticeship component whose purpose was to socialize the young teacher to one of several prevailing or new educational patterns. Early childhood teachers, for example, have generally been trained to the "Montessori" system, or to the "play-school" theories, or to "academic" approaches. In both student teaching and internship programs the young teacher frequently has learned only to accommodate himself to the existing school, rather than to make independent curricular and instructional decisions that reflect an advanced knowledge of curriculum materials and learning. Hence, it is frequently discovered at the end of a conventional teacher education program that the young teacher has not been prepared to make decisions concerning objectives or appropriate learning activities. It is necessary therefore to build a program which takes advantage of the virtues of the existing school and which prepares its students to work in them, but which avoids the over-stablizing effects of student teaching and internship which result from most present practice.

Scholarship

The present state of knowledge about teaching and learning is such that the teacher who would live rationally must be a competent scholar of teaching and learning. He must be prepared to create and test out original solutions to educational problems. He must be prepared to create and test out original solutions to educational problems. He must be prepared to create and study, and to research if necessary, curriculum materials that are prepared by other people, and he needs to be prepared to create with his colleagues what Robert Schaefer calls a school that is a center of inquiry. (2) This is the kind of goal that arises from the dilemma of the universities' commitment to the development of rational man. Although it will be extremely difficult to prepare large quantities of teachers who will have the capacity to inquire into teaching and learning, it is essential that the attempt be made. Otherwise, we turn away from the possibility of a reasoned life and a reasoned approach to education. We simply cannot support the conception of a teacher as an applier of formulas.

As roles in education become more differentiated, it will become more possible to prepare teachers for a high level of scholarship. The specialist in computer simulation, for example, will be in a far more manageable role than is the multi-purpose nursery school teacher of today, whose role is too diffuse to permit mastery in performance, let alone scholarship. Teachers with specialties and support systems such as those defined recently by Joyce (3) will be in a position to create new procedures and new knowledge about their effectiveness.

Complexity

Another consideration is the exceeding complexity of teaching. Teaching is not a single process. Some of the processes of teaching are scholarly in character. (For example, analyzing the modes of inquiry of scholarly discipline.) Others require great interpersonal capacity. (As working with others to change the character of a school.) Yet others are primarily technical abilities. (For example, diagnosing learning difficulties.) Consequently, the components of a teacher education program will not all look the same. Single methods in teacher education are very unlikely to produce the complexity of competencies that are necessary to the teacher. Some components need the kinds of methods that are characterized by training psychology. Other components require feedback techniques that enable the learner to monitor his own performance. Yet other components should be characterized by scholarly inquiry and still others may involve an almost therapy. The strategies of a sound program will be as multiple as are its components.

The Problems of Birth

Finally, the specifications of a teacher education program will be worthless unless they are accompanied by mechanisms for bringing them into existence. Even the most publicized innovations in teacher education are spreading very slowly at present.

Staff utilization in a new program needs careful delineation and extensive training programs have to be developed (13). Structural changes in public school programs are also required, and mechanisms have to be developed that ensure both the intitial and continuing education of the teacher is natural and vigorous in the school setting.

Building a Rationale for Teacher Education

The central task in the creation of the teacher education program described herein was the development of a conception of teaching that would permit the new teacher to function effectively in present day school settings but, even more, to work as an innovator in the development of new educational methods and institutional structures. In other words the teacher would emerge from this program prepared both to teach and to be a teacher-creator, who would have an aversion to being a bureaucratic functionary but would operate well in a school which is a center of inquiry.

In other words we attempted to develop a performance model of a teacher which would include competences necessary to help create new educational institutions and to study teaching and learning as well as to work in existing institutions.

Creativity and Control over Reality

Professional performance in all walks requires control over certain areas of reality. Let us examine architecture for an example. The well-trained architect controls knowledge about engineering of structural materials of various kinds, the processes of fabricating new materials, of drafting, of decorating, of selecting and designing furniture for various purposes. Equally essential, is that he controls strategies for analyzing problems of various kinds. He faces design problems, hearing problems, problems of function and space, problems relating to the creation of servo-mechanisms that can support the work of functionaries within an environment. The architect not only has strategies for analyzing problems but he is acquainted with a large repertory of other persons' solutions to those kinds of problems. He therefore controls design techniques. He knows how other people have approached problems of creating areas of quiet in busy places.

Most important, the good architect knows how to learn. In the course of a project, he can actually increase his capacity to perform his work. He learns to identify possibilities no one ever taught him and to solve problems that were not perceived when he was trained. In fact, the more creative he is the more he has to invent ways of learning, of monitoring and increasing his technical competence. Recently, for example, many architects have learned to create computer models of the buildings they design. As they alter their design, they can consult their model and see the implications of, for example, a change in one place on the stress that is placed somewhere else. The computer model can actually recalculate the specifications for structural members for certain kinds of changes to be made. The men who have learned to do this sort of thing control many areas of reality in such a way that their control increases continually as they see new options within their environment.

Let us transfer this conception to the task of developing performance models for teacher education. To do so--to create a model of a professional who will grow in capacity, create new options for children, and contribute to his profession--is to identify the areas of reality that he needs to control in order to define and solve educational problems. This is a very different conception of professional control from one which is centered on the training of the present-day functionary. Conceiving professional functioning as the creative manipulation of reality puts future growth into a central position. It focuses the training program on helping the teacher-candidate prepare himself as an innovator and to develop the personal flexibility, the interpersonal leadership capacity, and the technical competence that are required for those who would participate in the creation of the future of education. Consequently, a guideline in the development of the components of the program is that each one is shaped so that the creative activity is given the central place and that mastery of subject, mastery of techniques, are seen as means to a creative professional life rather than as ends in themselves. Such a spirit implies, also, that the teacher-candidate needs to become responsible for the regulation of a great deal of his activity. He needs to engage in cooperative endeavor with his peers and the faculty members in the reshaping of his education as it proceeds. The components of teacher education therefore need to be shaped in such a way that they will provide for considerable modification by the learner as he becomes more certain of the goals he is aiming for, and more aware of means for getting there.

Identifying the Processes of Teaching

In order to identify the processes which a teacher engages in, as a teacher-innovator, we analyzed research on schools and teaching and on theoretical positions which identify the kinds of environmental variables that teachers need to be able to manipulate in order to make various kinds of learning come about. We used especially previous conceptions by Joyce and Harootunian who had developed one conception of processes which the teacher needs to be able to control.

The Institution-Building Processes

As the study progressed, we found that some of the jobs of teaching seem to relate to the school or to the wider educational institution rather than to encounters that occur in the classroom or in other places where teachers work directly with children. In other words, some of the processes of teaching seem to be institution related. We came to call these the institution-building processes. They are the processes of creating educational institutions, working with his colleagues, members of the community, and his students, a teacher has to identify the objectives of the school and the methods and procedures which will be used to achieve these objectives. Curricula have to be developed or they have to be adapted for the local school. Staff deployment patterns have to be made. Provision for meeting individual needs of students has to be developed. Learning materials, including books, motion pictures and other devices need to be put together and made available to the students.

The social system of the school has to be planned for. As we identified the institution-shaping processes it became evident that teacher education has in the past paid much less attention to institutional functions of the teacher than it has to the functions that take place within classrooms. For example, teacher education pays much less attention to curriculum, than it does to instructional methods. Also the young teacher frequently does not envision himself as a future institutional decision-maker. He generally feels that his goal is to prepare himself to work with particular groups of children within classrooms. As we realized the neglect of the institution-shaping processes of teaching by both teacher education programs and by their students, it became obvious that the components to achieve control over these processes would have to be entirely new ones for teacher education. It also became apparent that institution-building is a very complex set of processes. Hence, these were divided into three general categories which overlap somewhat but make it possible to divide the teacher education task into more manageable components. The three processes are those of creating curricular patterns for a school. (Developing the missions of the school and determining the particular means that will be used to accomplish those objectives.) Second are the processes of developing the social system of the school. (The organization of faculty, organization of students, and the blending of these into a coherent social system.) The third set of processes are those that have to do with developing the technical support systems within the school. (Assembling the media components, library, and self-instructional systems.)

The Processes of Interactive Teaching

In addition to institution-building, the teacher works with children. Sometimes he interacts in an attempt to change them, to teach them. At other times he tries to induce them to teach themselves. In either case he needs to possess strategies for making and carrying out instructional decisions. He needs to possess a wide range of teaching strategies that he can bring to bear when they are appropriate. He also needs to control processes for building an effective social system with a group of students. He has to know how to bring structure into a difficult situation and how to facilitate independent learning in people who are ready to teach themselves. The teacher has to interact with children in different ways and adjust his behavior in order to teach them more effectively.

All these processes make up the larger complex process of interacting effectively with children which is another definition for direct teaching.

The Processes of Innovating

The teacher-innovator needs the capacity to resist the slide into routine that tempts everyone. He has to approach problems with zest and flexibility, and see himself as a creator of new things. He has to cope with the bureaucratic structure of the school and work with his colleagues to develop professional climates where innovation is the norm.

The Interpersonal Processes of Innovating

Teaching is not a solitary business. Teachers have colleagues who know a great deal about them and who influence them. Students, parents, and administrators all have a candid view of the teacher in action.

Teaching is done inside a very well-defined social institution. It has been traditional that the institution has been a bureaucracy whose functionaries play out the ascribed roles that are common within the schools in the western world. Innovative activity clashes with bureaucracy, by definition.

To be an innovator involves dealing with colleagues, students, parents, administration, and the character of the bureaucracy. All of these are difficult to cope with. Especially, the enormous weight of bureaucratic behavior saps the energy of the innovator. Even students become accustomed to reacting to certain patterns of teaching and they resist when "the language game of the classroom,"[1] is changed. They, too, perpetuate routine. Hence, creative teaching includes interacting with colleagues, students, parents, and administrators in productive ways, learning to analyze the ways interpersonal relations are stabilized and to master the strategies of inducing change without creating chaos or undue discomfort. Working with others to create interpersonal climates which are interdependent, where the arrangements of living and teaching are negotiated, subject to scrutiny, and continuously improved, are as essential a part of teaching as the selection of educational objectives and the creation of the appropriate means of carrying them out.

The Personal Aspects of Innovating

The development of a creative personality is another critical element. Generating unique solutions to problems, creating new educational forms and testing them out, finding new ways to reach students, adapting to a wide range of student and faculty personalities, all require a creative self. The teacher must handle information and theories flexibly and accurately. He must strive for minimal personal bias but act with resolve. He must be able to control himself when children challenge established authority and standards. He must provide a mountain of support for the frightened and insecure child. The teacher must become able to assess his own behavior objectively and then to work deliberately to improve it - he cannot afford to be defensive about his personality or practices.

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[1] See Arno Bellack, et.al. The Language of the Classroom (Teachers College Press, 1966).

A strong component then of a teacher education program has to be devoted to helping the teacher learn a creative personality. He has to master the processes of flexible and continuous recreation of his personal and professional life.

The Teacher-Scholar

Pervasive in teaching is the continuous making and transforming of knowledge. The teacher needs a continuous relationship to the scholarly disciplines and other sources of man's accumulated knowledge. The teacher must control those methods that scholars use to organize life experiences and he must know how to instill this operational knowledge in students. Since knowledge is not simply data or information, but is the way one goes about seeking data and drawing generalizations, the teacher must know about truth and fallacy, about evidence and bias, about the nature or theory of knowing. In addition, the teacher-innovator must learn to study about teaching and learning. He needs to engage in the process of creating knowledge about education and of using knowledge which is made by others.

Equally important, he needs to know what knowledge is from the point of view of the young knower. He needs to be able to reach the mind of the child and to try to understand the child's transformation of knowledge.

The picture that emerges is of a teacher who is capable of creating a school, of building the curricular, social and technological systems that make up an educational environment. He can also make and carry out instructional decisions, and interact with children in such a way that a vigorous intellectual climate is created. This teacher is also an innovator. He can work with others and lead others. He understands the social forces that retard change and he knows how to work with his peers to create innovative communities within what otherwise become bureaucratic organizations. This teacher is also personally creative. He fulfils his needs for adventure by creating a personal environment in which he can seek his own meaning through teaching. This teacher is also a scholar. The academic disciplines are his friends and the student world is a comfortable arena of his inquiry. Because he is comfortable with the processes of studying, teaching, and learning, he is a good colleague in a school that is a center of inquiry.

This picture of a teacher innovator is an ambitious one. However, we take the position that this technologist, innovator, learner is the proper goal of any teacher education program in any institute of higher learning in the United States. If lesser images of a teacher are set forth as the goal of teacher education, then we seriously question whether it is necessary to have a teacher education within colleges. If a teacher who is only a technician or simply a bureaucratic functionary, he can (and should) get most of his training on the job in the school situation. However, a teacher who controls the processes of educating, innovating and learning as we have set them forth here, however, requires an extensive training program which attempts to build his personality and his capacity to learn as well as his ability to educate children.

The Overall Objective of the Teacher Education Program

Although the specific behavioral objectives of the teacher education program will be spelled out as the specifications for each component are presented, the overarching goals of the program are to produce a teacher who controls the processes that we have been describing. His capacity to innovate and to practice scholarship are as much a part of his professional life as his abilities to build educational institutions and to interact with learners. Such a teacher is different from the traditional product of teacher education in several ways. In the first place he is competent to participate in the creation of the school milieu as well as being competent to work directly with children. A second difference is his capacity to teach through a variety of technologies as well as to work directly with children. Another difference is that our teacher is trained as a student of education. He has a wide variety of teaching strategies that he can select from, and he can work with other teachers to study the effects of teaching strategies.

The objective of the program consists of a performance-model of a teacher-innovator. The model was developed by analyzing the processes of institution-building, interactive teaching, innovating, and scholarship.

The structure of the program flows from the model and consists of four basic components, one devoted to each of the four categories of teaching process.

Part II

The Program Structure

Chapters Five through Nine
describe the general
methods and structure
of the program, including
the development of
a school staffed
for the study of education

Chapter Five

The General Structure of the Teacher-Innovator Program

The program has been developed in such a way that it can be adapted to four-year undergraduate programs, five-year programs, two-year master's level programs and to extensive graduate programs which require as much as three years of study. The components and sub-components have been interrelated in such a way that they can be reorganized easily. Since Teachers College is a graduate institution, the program is usually discussed, in this document, in terms of master's level programs of one and two year's duration.

The teacher education program has been designed around the four sets of processes that have been identified earlier as the basic processes of teaching. A major component has been built for each of the four processes. The four components are called:

1. Interactive Teaching
2. Institution-Building
3. Innovating
4. The Teacher-Scholar

The four basic components have been designed to bring the teacher to a point of development where he can operate professionally in a school or other educational setting. The continuing or in-service education of the teacher consists of extensions of the four components. To describe the program only in terms of the four components would be insufficient. The program cannot be effectively implemented without the creation of a particular kind of school-university setting in which many aspects of the basic components and all of the continuing components take place.

This school which is modeled after educational designs developed by Schaefer and Joyce, operates as a "school which is the center of inquiry," which is to say that it is a school which studies the processes of teaching and learning as well as carrying them on.[1] The faculty from that kind of school is an integral part of the faculty of the teacher education program. Most of the activities in this teacher education program include research into teaching and learning by the teacher candidates and his colleagues. Hence, the program is a school that will operate as the center of inquiry. Hence, a major section of this report is given to the processes of creating schools as centers of inquiry. The creation of the school is the most difficult aspect of implementing this program. Chapter Eight deals with the creation of the school.

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[1] See: Robert J. Schaefer. The School as a Center of Inquiry (New York: Harper, 1966).

And, Bruce R. Joyce. Alternative Models of Elementary Education (Boston: Blaisdell, in press for early 1968).

Each component has its own special organization and methodology. However, the entire program is developed around two models.

One is democratic process. The program is operated through a democratic organization of students and faculty. Essentially, the students administer the program to themselves, reshaping the components with the assistance of faculty counselors. The democratic organization and process is described in the next section. (Chapter Six)

The second method is the application of the differential training model which provides for the tailoring of the program to the personality, competence, and value orientation of the individual students. This highly unusual model permits differentiation of instruction even within the context of group inquiry. The model is described in Chapter Seven.

Following the description of the democratic method, the differential training model, and the development of the Inquiry School, a plan is set out for the development of the contact laboratory, the sequence of experiences which the teacher candidates have with children and schools. This is included early because the contact laboratory provides a temporal framework against which the components of the program can be seen in relation to each other.

The body of the report consists of the description of the four basic components.

The Format for Describing Each Component

The sections that follow describe each of the components of the teacher education program. The same format is used to describe each of the components so that they can be readily compared and so that the same support systems within the institutional setting can be developed to service all of the components. The categories are as follows:

I. The processes of teaching around which that component was built. The description of each component begins with an elaboration of the process of teaching, control over which is the objective of the component.

II. The behavioral objectives are then specified. In some cases the behavioral objectives are the overall guiding objectives and are to be used to focus the activities within the component. In other cases there is a sequence of development and some objectives precede others in an intended pattern.

III. The rationale of the component is elaborated. In some cases alternative approaches to developing such a component will be analyzed. Wherever possible, components have been developed on a theoretical or empirical base. Where this is not possible, the rational basis for the component is explained.

IV. The means of each component are then described. The means flow from the rationale. In some cases the means are general and require that the faculty and students together proceed along certain generally-defined paths toward the goals. In other cases the means are very specific and may even vary for different behavioral objectives within the component. This is especially true when there are several sub-components which make a larger one.

V. The administration of the component is then dealt with unless it is obvious. Staff-utilization patterns are discussed. The provision for student participation in the redevelopment of objectives and means is included. Needed support systems are identified.

VI. Provisions for feedback and differential training are described in some cases. In the case of most of the components the application of the general differential training model has been discussed. That is, provision for matching students with appropriate training environments or modes of instruction has been made, and is illustrated.

The following charts correlate the components with the contact laboratory in order to provide the reader with a source of possible temporal relationships among the components.

Chapter Six

Democracy as a Method in Teacher Education

Although every component is characterized by its own rationale and methods, all activities take place in the embrace of a democratic organization which dominates the tone of the program and provides the matrix of the human relationships within which learning takes place. The teacher-candidates are organized into functional groups that operate as miniature democracies throughout the program. Rather than organizing the program so that there is a group called the "faculty" that teaches another group called "students," the faculty serves as advisers to these democratically-organized groups which negotiate their way through their preparation as teachers. As the student begins each component the faculty explains the goals of the component, the means and the support systems which have been assembled. They also explain the kind of devices that have been developed to monitor progress and to help the candidates to obtain feedback on their development. From this point the students administer the components to themselves, reshaping and adapting them to fit their personalities. The faculty serve as advisors, modifying their role to apply the differential training model.[1]

In the next few pages the rationale for the participatory democracy method is explained and the procedures for administering are described.

Cooperative Inquiry as a General Method

The slow process of humanizing formal education and adapting it to the needs of a democratic society has been made difficult by several factors. One is that so few of the people who are entering teaching have experienced life in a democratically run educational institution. As a consequence they have no models or few models of democratically orientated procedures and those that they have tend to be individual rather than institutional. That is,

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1. The differential training model is described in the next chapter. This model provides for modifying the methods of each component in order to match the competence level of the student, his cognitive orientation, his value orientation and his feedback preference. The faculty, while they are giving assistence to the democratically-organized groups of students, vary their participation in order to execute the differential training model.

some of their teachers may have operated democratically but rarely have they seen a school that is operated that way. A related problem is that the teacher-candidates have become accustomed to having adult teachers monitor their progress and structure their activities. Many reach the point where they do not feel that they are progressing unless thay are having their progress monitored by a teacher. Often in fact they doubt their own judgement and that of their peers about progress. Similarly they doubt their own judgement and that of their peers about the methods that should be used to achieve any objectives. Yet other students are in active rebellion against control from faculty and administration, and have come to mistrust organized programs of education.

Compounding these other factors is the fact that the teacher-candidate has, during his student years, gradually internalized the bureaucratic role of the teacher that he has observed as a student. Often, in fact, he has come to feel that this bureaucratic role is the proper role for a teacher, so that he frequently feels uncomfortable with any other kind of role in those who teach him.

All of these problems can be serious obstacles to a forward looking teacher education program. The lack of democratic models means that the teacher has to learn how to run a democratic institution almost from scratch. Some candidates may well feel uncomfortable in democratic roles because they are not the "proper" roles that they have observed all these years. In his own education, he may resist cooperative roles because he wants authority-given feedback and control. Others will resist cooperative roles because they have lost faith in the "system".

The remedy is to operate the teacher education program as a democratic community so that students will see one in action and learn,by participating,to take the roles that are required if a democratic model is to be effective and satisfying.

Democracy with Self-Instruction

If each group of teacher-candidates is organized to administer to itself many of the aspects of the training program, then what is the role of the sometimes elaborate structure of the components and sub-components described in the document? The answer is that it would be unreasonable to expect the teacher-candidate to create his entire education without any structural framework within which to operate. He needs faculty opinion on what might be effective preparation for teaching. For example, he might not think to prepare himself to make decisions for shaping the school. Even if he thought of it, he might well have no idea how to go about training himself. The structure of the components provides the teacher-candidates with a map of teacher education that gives them a sufficient framework that they can then begin to make intelligent decisions about what they will do and how they will go about it. The orientation to the teacher education program thus becomes very important. First, the faculty needs to explain to the students the structure of teaching and the structure of the teacher education program it has developed. In the second case the faculty needsto prepare students to operate in a reasonably democratic way.

In order to facilitate "training for democracy" each one of the components begins with activities which help to train the candidates to democratic roles as well as to orient them to the ways the component is organized. For example, the initial activity which is suggested for the Strategies of Teaching Sub-Component is the presentation of the objectives and rationale of the component. The first learning tasks suggest that the candidates organize themselves into small groups (feedback teams) and begin to use the support systems to learn the teaching maneuvers that compromise the first level of objectives. As the students proceed through those early activities they are taught how to judge their progress. In addition, the activities are structured so that many decisions need to be made about what to do next and how to do it. There is, hence, practice in working together and making decisions within the framework of the component. The faculty member who is assigned to each group can modulate his role, providing relatively small or large amounts of leadership depending on the apparent needs of the group.

Another important aspect of the democratic method is to help the candidates examine themselves as a democratic group and learn to improve their operations. For this purpose the teacher candidates are very early exposed to the model of teaching which is described in the Models of Teaching Sub-Components as the "cooperative inquiry method." They are asked to read Herbert Thelen's Education and the Human Quest,[1] and John Dewey's Democracy and Education,[2] each of which describe variations on the theme of democracy in education. Following this,build a framework for analyzing cooperative inquiry that they will apply to their own work throughout the teacher education program.

Many activities throughout the entire program include opportunity for analyzing and improving the process of group interaction. The Institution-Building component, for example, includes much study of the development of social systems in education. The Interactive Teaching component similarly deals with the social system of the school and the classrooms, and provides an opportunity for the candidates to master democratic models of teaching. The Innovator component provides structures for analyzing social processes in the school and classroom. In all components the candidates analyse their own behavior as well as that of the children they teach. In fact, because the program is organized so that the teacher candidate is a self-teacher he is able to analyze his behavior simultaneously as teacher and learner. The fact that he is both teacher and learner does not diminish the effect of this but rather enhances it. For he will be acutely aware of how he (the learner) reacts to what he (the teacher) does.

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[1] Herbert Thelen. Education and the Human Quest (New York: Harper, 1963).

[2] John Dewey. Democracy and Education (New York: Macmillan, 1916).

Under this system the faculty leader must frequently play a muted role, but he engages in four functions which are critical to the success of the program. First, he is responsible for helping the students understand and rationalize the entire teacher education program. The students can hardly participate in the making of decisions when they do not know the framework within which they are operating. In the second case the faculty member needs to see that each component is thoroughly introduced to the students and rationalized to them sufficiently so that they can begin to participate in its shaping. Third, the faculty counselor must function to administer the differential training model. Fourth, the components require technical competencies that the candidates may not have in the early stages. The faculty member needs to provide the competence and then, as the student teacher candidates develop their own skill, increasingly reduce his role.

The Overall Democratic Structure

In addition to the above, the teacher candidates elect members to the faculty-student-administrator-council that oversees the general direction of the program. In this way students can participate in the reorganization of the entire program as well as in the development of activities within components that are more or less structured before they arrive on the scene. The number of students, faculty and administration who should be on the advisory steering committee will vary from institution to institution. (in a very large university, for example, where there might be four or five hundred students in a teacher education program the problem is very different from what it is in a small Master of Arts in teaching program.) The overall steering committee should be responsible for analyzing the components, obtaining student and facutly opinion about what is going on and making general evaluations of the program. In any program of any size it would probably also be wise to have a steering committee for each major component. This would spread the level of participation so that more students would be involved in institution-shaping activity and would prepare more students for the more difficult leadership roles. During the 1967-1968 academic year the elementary preservice teacher education program at Teachers College was operated generally as described above. The students also used the democratic organization to operate a complex summer school for disadvantaged children. During the process of planning the summer school several students exercised considerable leadership skill that affected their career plans substantially. We also learned that while participation is very satisfying and, we believe, more efficient than are the usual student-faculty relationships, it is important that students learn early in the game how to use the faculty to get things done so that they will not spend their own time in administrative details which will not contribute to their education. This area will vary from college to college and even student group to student group but it is a fairly pervasive type of need.

Obviously a high level of participatory democracy will not work unless faculty and administration are willing to permit students to voice their opinions and to influence decisions. An institution which is not prepared to engage wholeheartedly in democratic activity would do very well not to pretend an engagement. Otherwise it will be found that the students greatly resent being told they have decision making roles and then finding they do not. It is entirely possible that a disappointed student body will, having been organized and disappointed, create revolutionary roles for itself!

Steps in Getting Organized

The steps in establishing the democracy in teacher education are, then, as follows:

1. Orientation of teacher-candidates to the program. The overall framework needs to be explained at the point of admission. The steering committee should conduct the orientation.

2. Steering committees for the overall program and for the components and sub-components need to be formed with membership including faculty, candidates, and administration.

3. The teacher-candidates need to be organized into small groups of ten to twelve who will administer the teacher education program to themselves with help from the faculty. Each of these smaller groups operates as a democracy within the larger democracy. They are the "inquiry groups" referred to throughout the program.

4. The structures of the components and sub-components need to be explained to the inquiry groups at the beginning of each component so that they will be able to reshape the objectives and rationale of the component and will be in a position to help guide the component as it emerges.

5. Each component has already been organized in such a way that the early activities provide for additional training in democratic procedure. Fairly structured decision-making activities are provided and an easy opportunity is given to orient students to the components.

6. The early activities also teach the candidates how to give themselves feedback in relation to their own progress so that they will have a substantive basis for decision making. It is extremely unwise to have candidates drift into the habit of making decisions about learning without obtaining evidence.

7. Faculty members function within this framework to provide training as it is needed in terms of the democratic process and they modulate their own roles as instructors in accordance with the differential model.

8. The faculty counselor helps the groups analyze their own democratic procedure. For this purpose, the cooperative inquiry model and the theoretical works by Thelen, Dewey and Neil are used for models. The faculty helps the candidates to analyze their own behavior as teachers and learners throughout the program.

9. When necessary all participants are gathered together for decision making sessions. The overall steering committee probably should hold some regular large group meeting with all students, faculty and administration to deal with issues that concern the whole community.

Chapter Seven

The Differential Training Model

The individualization of instruction, carried to its logical conclusion, provides for students to proceed toward goals at their own pace, so that they receive much instruction when that is needed and very little or no instruction when that is appropriate. In other words, the learning activities match the competence of the teacher candidate. More than this, however, it provides for variations in educational techniques to capitalize on the particular characteristics of each teacher candidate as he proceeds toward the competency goals of the program. Finally, it makes provision for the candidate to participate in the creation of learning activities so that they will be matched to his own conceptions of his competence and his style. A model for accomplishing all these things, at least to some degree, is embedded in this program. It has been constructed in great measure from work by David E. Hunt of the Ontario Institute for Studies in Education. Specifically, Hunt prepared a position paper for this project, which appears as the Appendix to Chapter Seven. Many readers will find it profitable to read Hunt's paper before reading Chapter Seven.

The differential training model is constructed not only to individualize instruction by pacing, and to modulate training techniques according to the characteristics of the trainee, but also to maximize the likelihood of increasing the general flexibility of the teacher candidates. A flexible, creative personality is an underlying objective of this entire teacher education program and becomes, at times, a specific objective of several of the components. Flexibility is a product of the way training is carried on, rather than the particular competency-related methods of a program. This differential training model recommends educational procedures which are matched to the characteristics of the learners in such a way as to bring about growth in flexibility. In the broadest sense, all of the components in the program are directed toward increasing flexibility. The components dealing with teaching strategies, for example, do not ask that the teacher in training learn the "right" ways to teach, but that he master a wide variety of strategies that can be useful for different learners and different objectives under different conditions and that he develop the capacity to create original strategies as he needs them in teaching. This kind of capacity requires flexibility of a high order.

In the case of the teacher education program, the differential model serves two purposes. Not only does it match procedures to the students, but it also serves as a model for the teacher candidates--it shows them how to individualize instruction. The importance of this can be seen in relation to the Interestive Teaching Component, which requires that the teacher candidate learn how to adapt educational procedures to children. This is very difficult for many teacher candidates because rarely in their educational experience will they have encountered a school or a group of teachers who make a serious effort to adapt the procedures they use to the kinds of youngsters with whom they are working. Most of the "good" teachers that the candidates will have experienced in their own lives will have been people who do one or two kinds of teaching very well, rather than adapting a wide repertoire of teaching behaviors to their students. It is very important, therefore, that the future teacher have experience in a program which differentiates, so that he learn the principles of differential training himself by seeing them applied to him.

The underlying assumption of the differential training model is that training should be matched to the characteristics of the learner as well as the objectives of the component. As Hunt has put it, "the rationale here is identical to the belief that, in planning educational intervention for the classroom, the single most important aspect is the child and 'where he is now.' Although it is fairly obvious and reasonably well accepted to assume that one must 'begin with the child', it is less frequently assumed in the training of teachers that one must begin with the trainee. In this sense the present model may be seen as 'trainee centered' training program." The focus is to identify which trainee characteristics will be focused on and what aspects of the learning environment methods will be varied so as to match the characteristics of the learner. Hence the present model can be said to be a "matching model" in which efforts are made to match training to trainee characteristics. For this purpose we will use the concept of accessibility as defined by Hunt. The accessible characteristics of the trainee are those which make him compatible with certain kinds of training. The accessibility characteristics have to be defined in terms that are directly translatable to the kind of educational environment or methods which are amenable to him. The differential model relates four types of trainee characteristics (achievement level, cognitive orientation, value orientation, and feedback preference) to aspects of training methods which are adopted to those characteristics.

Matching the Achievement Level of the Trainee in Component Related Tasks

Throughout the teacher education program, training will be varied for each trainee in terms of his achievement within the given components. This type of differentiation will be practiced wherever the components' objectives are sequential, that is, when the achievement of some objectives depends on prior achievement of others, and whenever the amount of training can be varied for any objective. For example, in the Models of Teaching sub-component (Chapter Ten-B) there are three levels of objectives. In the first level trainees learn to carry on teaching maneuvers or small units of teaching behavior that have a limited effect on children. In the second level they learn several teaching strategies which are built on theoretical models of learning. These strategies are more complex than the maneuvers and more difficult to execute. At the third level the trainee creates and executes teaching strategies himself. At each of these levels varying amounts of training may be needed. Some students will learn very quickly to produce the variety of teaching maneuvers at the first level. Others will do that very quickly and will proceed to the second level. Some will move through the second level rather quickly and reach the third level. Obviously, different amounts of training are needed for learners who achieve at different rates.

This type of differentiation is the easiest to carry on, especially in the present training model where embedded evaluation procedures are provided. It is easy to tell whether a trainee has reached a given level or not, and where the trainees are "in on the game". That is, they also know whether the objectives are achieved. Hence, they can regulate training activity themselves. The procedures for this type of differentiation are built into the means for each component.

Cognitive Orientation

One of the central aspects of trainee accessibility is the personality of the individual--the system he uses for processing information. Hunt and his associates have described several levels of cognitive orientation and methods of matching training environment to orientation in a series of papers. The following is a paraphrase of their description of four levels or stages in cognitive complexity.

The application of the differential training model with respect to cognitive orientation requires, of course, that the training procedures be modified for students of different cognitive orientation. This is accomplished by varying the amounts of structure and task complexity in the approach to particular learners. As was described in Chapter Six, all of the components are organized so that inquiry groups work through each component. The groups are fairly small, usually ten or twelve candidates are introduced to any given learning activity. Some of the components are almost completely self-administering, so that a group initiates and monitors its own activity. Faculty counselors assist the groups to help them define and carry out tasks and obtain feedback about their progress. It is in the behavior of the faculty members that we have the opportunity to administer the differential training model. They are in a position to modify the amount of structure that is offered to the trainees and also the amount of tasks complexity that is offered at any time. For example, let us again refer to the Models of Teaching component (Chapter Ten-B). As indicated earlier, the component has three levels of learner activity. One level suggests that the teacher candidates master several teaching maneuvers. They do this in micro-teaching or small group teaching situations. The candidates analyze one another's teaching behavior and coach one another until they have achieved reasonable mastery over the maneuvers. The second level of activity suggests mastery of several models or teaching strategies which are derived from theoretical positions on teaching. In the third level of activity, the candidates create and execute their own teaching strategies, working with youngsters in school settings. An extremely unstructured and complex way to administer this component would be to simply explain the goals of the component to the students, help them organize themselves, and then encourage them to administer the component to themselves, drawing on the faculty member only as a resource. This method of training would be appropriate for highly complex students who are extremely mature and quite devoted to their education. It would be inappropriate for students of low complexity. The faculty leader then can provide candidates of low complexity with appropriate amounts of structure. He can lead them to one maneuver or model at a time and suggest explicit procedures for mastering them. The faculty member's ability to modulate the training environment in this manner is assisted by the fact that the candidates of high complexity will show a preference for the more unstructured and more complex tasks, and the candidates of low complexity will probably express, in an overt manner, preference for much less structure.

To maximize the movement of the teacher candidate toward greater complexity and flexibility, the faculty leader should gear the training environment so that it is slightly more complex than the trainees' preferred style; that is, the candidate might want a great deal of structure with all of the leadership coming from the faculty. Were the faculty member to accede to this request the trainee would probably progress toward the learning goals within the component at a satisfactory rate, but he would not be likely to increase in flexibility. The faculty member should, therefore, provide a reasonable amount of structure for this individual, but not quite so much as he desires nor quite so much that would match his personality exactly. By "leading" the personality somewhat with the training environment, we increase the likelihood of increasing conceptual complexity and flexibility as well as progress toward goals.

Matching the Value Orientation of the Teacher Candidate

Even at the outset of teacher education, student candidates appear to have pronounced value orientations toward children and toward educational procedures. As Hunt puts it, "whether trainees or anyone else will be likely to learn skills designed as intervention procedures toward goals they do not believe in or that they disagree with is a question about which there is little evidence. However, on the basis of available evidence, plus intuition, it seems important to include the trainee's value orientation as a classification characteristic in differential training. Trainee attitude toward the best way to teach, as toward deductive or inductive teaching, is significantly related to the communication style of the trainee." In the components of the present teacher education program, the trainee is not required to learn educational procedures in a monolithic manner. That is, he is not taught any right or wrong way to teach, but is rather expected to expand his repertoire of available strategies for making and carrying out instructional decisions within educational settings. Teaching is to become, for him, an experiment. The difficulty in this is that it asks a student to learn things that can be used, at least potentially, for ends in which he does not believe. For example, there are some students who absolutely rebel against highly controlling teaching procedures such as programmed instruction. Some of these candidates prefer non-directive strategies. Still other students are very much in favor of directive teaching and some of them are strongly against non-directive methods and methods which deal with the affective dimensions of student behavior. People of both of these extreme value orientations are asked in the present program to master teaching procedures that could conflict with their basic positions.

One general procedure in this program is to stress the instrumental nature of the things that are learned. To try, in other words, to get the teacher to accept the notion of increasing his repertoire and to concentrate on the acquisition of skills so that he will become more aware of the possibilities in techniques that he may first regard as foreign to his beliefs. (For example, teacher candidates who believe in non-directive methods may become aware of the power inherent in some directive methods for increasing the independence of students.)

It is more important, however, to differentiate instruction so as to capitalize on the value orientation of the students. For example, if a teacher education student has a child-centered orientation, it behooves us to begin by teaching him strategies that are child-centered. From that point he can expand his repertoire from those strategies to others he may not conceive as so friendly. While learning a child-centered teaching strategy, he will also acquire some behaviors that are essential to the carrying out of teacher-centered or academic-centered strategies and will thus be along the way to some extent. Conversely, students who believe in academic- or community-centered teaching may begin by learning strategies which are obviously appropriate for those purposes. In the process, they will acquire skills which are appropriate to other kinds of strategies and can begin to develop a wider range of skills.

Matching Motivational Orientation (Feedback Preference)

Hunt points out that a variety of studies have shown that "motivational orientation affects preference for and reactions to different forms of feedback." For example, French demonstrated that persons high in need-affiliation solve more effectively under conditions of feeling-orientated feedback, whereas persons high in achievement-orientation solve problems more effectively under conditions of task orientation. Similarly, Wells 1957 found that persons who were other-directed worked harder under conditions of experimental-defined feedback while inner-directed persons worked better under self-defined feedback. Other studies have demonstrated the differential effects of peer-approval versus authority-approval, etc. While we have been unable to find a case where a differential training model was actually applied using motivational orientation as one of the trainee characteristics, the evidence that it affects performance seems clear enough now that it is appropriate to institute this kind of differential training. Hence, our model includes differentiation according to the candidates' preference for peer-approval versus his preference for authority-approval. Some students prefer, in other words, to have their performance analyzed and receive feedback from their classmates, whereas others like to be able to appeal to a more experienced person or someone in a position of authority. In the present teacher training program, these are easy conditions to vary. It is relatively easy for a faculty member to study the feedback preference of the students and to increase or decrease the amount of feedback that he himself provides for any one student. The variable in other words is the feedback from the instructor. He may arrange for the students who dislike peer-feedback to work together in feedback teams so that he can provide much help. He may play a minimal role with other teams.

In other words, the faculty counselor should respond to student need by providing wanted feedback for some and avoiding imposing on the person who does not seem to want or need that kind of help. The faculty member will have to observe one caution. Some of the students who prefer peer-feedback may do do in order to avoid judgement about progress. This avoidance should cause no difficulty in the present program provided that the student does receive feedback from his peers. However, if he succeeds in avoiding feedback from the peer source also, then there is a difficulty which the instructor has to resolve.

Summarizing the Differential Training Model

The differential training model provides for the individualization of instruction. More technically, it provides for the matching of the training environment to the characteristics of the students. The model operates in each of the components and subcomponents of the teacher education program. It operates in terms of four training characteristics: learner competence within the components, cognitive orientation, value position, and feedback preference. The trainee himself will make most of the adjustments to competence level using the embedded evaluation techniques to assist him. In the case of cognitive orientation, the instructor will modify the amount of structure in the tasks that are given and the complexity of the tasks. (He may encourage grouping of students to accomplish this at times. Particularly in the innovation components it might be well for students of high complexity to be grouped together for some of the tasks and students of low complexity to be grouped together, because in that component, the peer pressure of the highly complex students could provide a disorienting training environment for the students of low complexity.) In the case of value preference, the instructor can bring this into the open and students can begin with tasks that are compatible with this particular educational philosophy. In the case of motivational orientation, the response is to increase or decrease authority-given feedback.

It is extremely important that any attempt to differentiate training not be limited simply to achievement within the components. Just helping people progress at their own rate through a series of skills or tasks is not likely to accomplish very much unless it is accompanied by variations in the training procedures which accommodate the learner characteristics.

The differential training model is an indispensible accompaniment to the democratic method. The application of the model prevents student rule from overriding the characteristics of individuals within any functioning group and provides guidelines for students as they attempt to adjust the training environment to themselves. For example, a person in the models of teaching component who comes to the early activities with a wide level of achievement should not be held back because the other members of the group are at a lower level of achievement. Rather he should be enabled to go ahead. The group should recognize this and assist him in doing it. In this way, the differential training model provides a kind of constitution of individual student rights that makes the participatory provisions more relevant to the individuals.

Appendix: Chapter Seven

Differential Training in Teacher Education and Its Implication for Increasing Flexibility in Teaching

David E. Hunt

Ontario Institute for
Studies in Education

The purpose of this paper is to derive a set of principles to guide plans for the differential training of training agents, and to illustrate these principles by applying them to attempts to increase the flexibility. Following an earlier model (Hunt, 1966a) we use the generic term, training agent, to describe a person who provides an interpersonal environment for the person or group with whom he interacts to produce a particular effect or change. Thus, we consider teacher as well as psychotherapists, counselors, social workers, and industrial trainers all to be training agents. The present paper will focus on the pre-service training of teachers and the in-service training of teachers, but presumably the principles would apply to other professional workers and trainees. There seems to be enough similarity in the education of various training agents to warrant their generic consideration, and such a common view permits, for example, considering discussions about training change agents (Lippit, Watson, and Westley, 1958) and the training of counselors (Truax and Carkhuff, 1967) in terms of their relevance for teacher education.

We will derive some principles for planning the differential training of pre-teachers by using the concept of "matching" which describes the degree of fit between the training intervention and the trainee[1] to accomplish certain objectives.

The analysis will proceed by (1) stating certain training objectives; (2) considering certain trainee characteristics relevant to intervention; (3) specifying certain forms of training intervention; and finally, (4) deriving those trainee-intervention combinations most likely to produce the desired objectives. Several assumptions underlie this differential training approach. First, that planned training programs must begin with a thorough understanding of the trainee's initial characteristics in order to produce some meaningful change through training. Second, that in most cases, there will be sufficient variation among trainees to warrant adapting the training intervention of such trainee differences. Third, regardless of the amount of variation among the trainees, that a careful analysis of the "match" between trainee and intervention is likely to force a more explicit consideration of the process involved in how trainees change during the course of the program.

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[1] "Matching" has been more customarily used (Hunt, 1966b; Hunt, 1968) to apply to situations in which the training agent himself radiates an environment toward a person, e.g. a teacher presents a lesson in an environmental context to a student, which is "matched" or "mis-matched" for certain objectives. However, analysis in terms of matching should be equally useful here, and requires only that we use a term such as training intervention to make clear that the environment in differential training refers to teaching procedures directed toward the trainee, as distinct from the environment which he will learn to radiate later toward a person.

Objectives of training

One of the most useful forms for specifying objectives is to state them in terms of components characterizing the effective training agent. Component analysis permits initial characterization of a trainee in terms of a component profile, and subsequent evaluation of various forms of intervention in terms of the degree of change produced in components. For example, we have used three components --adaptability, motivational, and inter-personal-- to assess Peace Corps Trainees (Hunt, 1965) and to suggest how different component profiles might be required for different Peace Corps assignments, e.g. teaching, community development. In an industrial domain, Harrison and Oshry (1967) have developed an Organizational Behavior Describer Survey which consists of four components: rational and technical competence, verbal dominance, emotional expressiveness, and consideration. In the area of psychotherapist and counselor effectiveness, Truax and Carkhuff (1967) have suggested three essential components: empathy, non-expressive warmth, and genuineness.

More specifically relevant to the training of teachers are the components suggested by Joyce (1967): (1) making and using knowledge, (2) shaping the school, (3) teaching with strategy, (4) creating interpersonal climates, and (5) controlling the self. Teacher sensitivity (or the capacity to react appropriately to the learner's frame of reference) and teacher strength (or the capacity to structure and organize the classroom) have also been used as two components useful in assessing and planning for differential treatment of teacher trainees (Weinstein, Joyce, and Hunt, 1965; Hunt, 1967; Weinstein and Fantini, 1968).

Another system of component analysis, which I have proposed (Hunt, 1966a) and which we will use here as a major illustrative approach, consists of (1) skill in discrimination, (2) skill in radiating environments, and (3) skill in flexible modulation from one environment to another.

Component analysis is especially attractive in its potential for initially characterizing trainees in terms of a component profile, and relating such profiles to trainee effectiveness. However, if a component system is to serve as the basis for planning a training program, some understanding of the relation between components is required, e.g. one needs to know whether one component is a necessary prerequisite for another. In the "model for analyzing the training of training agents" (Hunt, 1966a) it is assumed that the three sub-components in discriminative skill -- discriminating betweeen environments, discriminating between behaviors, and discriminating between persons-- are at least partial prerequisites to skill in radiating an environment to produce a specific behavior; some recent research, conducted in a different conceptual context (Brooks, 1967), suggests this is the case.

Allied to the problem of the relationship between components is the issue of training for specialists or generalists (Lippitt, Watson, and Westley, 1958) since it is likely that the training of generalists will require prerequisite skill as specialists. In describing the training of treatment workers, Palmer (1968) suggested that, although most workers, because of their preferred style are most effective with certain types of youngsters, later may "branch out", i.e. become more generally effective. A further issue in specifying objectives has to do with whether one is attempting to produce the acquisition of the component (which is likely in pre-service training) or attempting to produce the maintenance of the component (which is often the case in in-service training).

In order for training objectives to serve as helpful guides in the specific planning of differential training, it is necessary to come directly to grips with some of these issues. Put another way, objectives may be expressed in terms of components which can be objectively measured so that the ideal ultimate objective is operational, and trainees may be characterized in terms of such a component profile so that one knows where they are at present; however, the two representatives (ideal and present) are not sufficient in themselves to permit planning specific training interventions.

The first practical problem is choosing which one of the components is to be the focus of the intervention. This decision involves the issues of order or sequence which were mentioned earlier and has to do with the pattern among the components. Order of intervention may also be determined by the potential ease or difficulty in inducing change upon a component since it may be advisable to begin with a component on which change is more likely to occur. Also, there is the question of how many of the components can realistically be expected to change. If planners are willing to settle for a circumscribed set of component skills, then of course this will affect strategy in specifying objectives.

For purposes of the present paper, we will use the components in the training model (see table 1, from Hunt, 1966a) to provide a specific set of objectives which will serve as specific examples for discussion. As mentioned previously, these components are ordered in three sequential hierarchies so that, for example, if a trainee is lacking in discriminative skill, this component would be the focus of intervention before attempting to induce change in skill in radiating environments.

In concluding this section we might sum up by saying that a system is needed which orders and specifies immediate objectives and, in addition, measures the degree of present skill level of the trainee on the components. Once this has been accomplished, we can then turn to a consideration of trainee characteristics as these will serve to guide planning of the intervention.

Trainee characteristics

Before setting forth those trainee characteristics thought to be most important for guiding intervention in a differential training program, it will be useful to review some underlying assumptions. Within a matching model framework for training teachers, one takes the position that one must begin with the trainee --where he is now and his change-relevant characteristics-- in order to intervene to produce change. The rationale here is identical to the belief that, in planning education intervention for the classroom, the single most important aspect is the child and "where he is now". Although it is fairly obvious and reasonably well accepted to assume that one must "begin with the child", it is less frequently assumed in the training of teachers that one must begin with the trainee. In this sense, the present model may be seen as a "trainee centered" training program.

Using Lewinian terminology, it is useful to view the change process as one of "unfreezing", producing change, and "refreezing". Viewed in this light it becomes immediately important to specify the procedure for "unfreezing" or "reaching" the trainee. We will consider this issue under the general rubric of accessibility. Thus it is not sufficient to describe the trainee on the components as he is now, and to indicate that component on which change is desired. In addition, we must characterize the trainee in terms which will be directly translatable to that mode or form of training intervention to which he will be most open or accessible. When we deal with a blind or deaf child we are aware of the importance of accessibility channels; though less dramatic, the concept of "tuning in" to the most appropriate channel for the trainee is equally important. Within a matching model framework, the characterization of the trainee must be in terms

Table 1

Skill components of agent effectiveness

Type of Skill			
Skill in flexible modulation from one environment to another		To shift from one environment to another under appropriate circumstances. (Time 1) E_x: $P_1 — B_1$ (Time 2) E_y: $P_1 — B_3$	
Skill in radiating environments	To radiate a variety of environments E_x: E_y: E_x:	To radiate that environment which will produce a specific behavior E_x: $— B_1$ E_y: $— B_2$	To radiate that environment which will produce a specific behavior from a particular person E_x: $P_I — B_1$ E_y: $P_{II} — B_1$
Skill in discrimination	To discriminate between environments E_x / E_y / E_z	To discriminate between behaviors B_1 / B_2 / B_3	To discriminate between persons P_I / P_{II} / P_{III}

which will be compatible with variations in the training intervention; we are not here concerned with trainee characteristics except as they will guide the differential planning of the intervention.

In what follows, the principles are derived for a single trainee and the most appropriate training intervention. Issues of grouping, how manytrainees to put together, etc., will not be considered since these issues frequently depend upon available resources, urgency of producing change, etc. We will be developing a set of general principles for a 1:1 situation, leaving the implementation of these principles up to the practical exigencies.

As noted, matching models are formulated by stating two knowns, the immediate objective and the trainee characteristics, and deriving the third, the training intervention. Trainee characterization will be viewed in two general aspects: (1) present skill and (2) accessibility characteristics.

Skill Level.

The trainee should be characterized in terms of his present position on the skill component which is the focus of the intervention. We have discussed in some detail (Hunt, 1966a) procedures for assessing trainees in terms of discriminative skill, skill in radiating environments, and skill in modulation. Before going on to a discussion of accessibility characteristics, we should note that one may take a general view as we have earlier (Hunt, 1966b; Hunt, 1968) regarding malleability, likelihood of change or openness to change. Other things being equal, it is likely that pre-service teacher trainees would be more open to change than experienced in-service teachers. It should be noted that the distinction between skill level and accessibility characteristics may blur in some cases, e.g. low skill level may in some instances be very closely related to simple cognitive orientation.

Accessibility Characteristics

1. Cognitive orientation: One of the central characteristics of trainee accessibility is the system each individual uses for processing information. Variation has usually been viewed as ranging from simple to complex conceptual structure (Hunt, 1966b; Schroder, Driver, and Streufert, 1967). The utility of Conceptual Level(CL) as a classification type in matching models has been primarily in relation to students (Hunt, 1966b; Hunt and Hardt, 1967) although recently two studies have used it in a training intervention context (Bundy, 1968; Heck, 1968).

Cognitive orientation appears to be an important accessibility characteristic because a trainee will presumably experience, apprehend, comprehend, organize, etc., new material in ways determined by his past experiences in organizing information. Cognitive orientation, or specifically CL, is related to, but not identical with intelligence.

2. Value orientation: Whether trainees or anyone else will be likely to learn skills designed as intervention procedures toward goals they do not believe in, or that they disagree with, is a question about which there is little evidence. However, on the basis of available information plus intuition, it seems important to include the trainee's value orientation as a classification characteristic in differential training. Teacher trainee attitude toward the best way to teach, i.e. inductive-deductive, is significantly related to the communication style of the trainee (Hunt, 1967.)

In an educational context, it is probably inadvisable to use a single dimension to measure a trainee's value orientation. What is probably most important for the trainee is whether he can accept a variety of procedures as being useful at different times. Although one may regard as desirable the trainee who favors inquiry and inductive lessons, unless he can also accept the necessity for structured lessons, he will be much like the "rigid liberal" and as difficult to change as trainees with opposing values. This point was especially clearn in observing some trainees in an urban teacher preparation program who valued giving students freedom and could not bring themselves to establish order in the classroom.

Measures of this (e.g. MTAL, Attitudes to Teaching, Hunt, 1967) will require revision and extension so that they do not simply classify the trainee on a single dimension. It seems necessary that they also give some indication of what Sherif has called in a different context, his "latitude of acceptance."

Much of the lack of knowledge about the relation between value orientation and the acquisition of skill comes about because we do not understand the role of awareness. As we learn more about it, we will be better able to see the degree to which values are likely to intrude on or facilitate skill acquisition. Recently, in a discussion group, Carl Bereiter commented that when training preschool teachers for his programs, he attempted to encourage the trainees to postpone asking the question of whether they should use a particular skill while they were learning it; rather he felt they should simply add it to the repertoire so that the should question could be answered later without its being affected by the trainees' incapability.

Another factor linking value orientation and skill acquisition is the trainee's feeling of adequacy. Put conversely, one reason for a trainee's disinclination to acquire a skill which is at odds with his present value orientation may be the threat he perceives this skill to pose to his feelings of adequacy.

3. Motivational-incentive orientation: Motivational orientation affects preference for and reaction to different forms of feedback. Since the time when early studies indicated that praise and blame had differential effects, i.e. praise being more effective with extroverted students and blame or criticism with introverted students, the importance of differential susceptibility to feedback and reward has been apparent. French (1958) demonstrated that persons high in affiliation motivation solved problems more effectively under conditions of feeling-oriented feedback, while persons high in achievement orientation solved problems more effectively under conditions of task-oriented feedback. Similarly, Wells (1957) found that persons who were other-directed worked harder under conditions of experimenter-defined feedback while inner-directed persons worked better under self-defined feedback. Other studies have demonstrated the differential effects of peer approval vs. authority approval, etc.

The precise nature of the dimensions and methods for measuring them is a little less clear when considering motivational orientation than the other classifications because little work on its relevance has been done in a training context. However, it seems likely that some of these dimensions which have been mentioned, i.e. peer approval-authority approval, feeling feedback-task feedback, etc. will be useful.

4. Sensory orientation: Most forms of presentation in training intervention involve both visual and auditory material. However, in some instances,there may be an option and it seems useful to consider the trainee's preferred modality of receiving information. Some evidence exists for stable differences in the preference of one modality over the other, but methods of measurement would probably have to be developed.

Summary of trainee characteristics

First, the trainee should be characterized in relation to his position on the skill level in question, e.g. if the objective is skill in discriminating between environments, then his level on this component should be indicated. If he is weak on the component, then consideration must be given to his accessibility to intervention aimed toward increasing his skill level. Toward this end he should be characterized according to an accessibility profile: (1) Cognitive orientation, i.e. Conceptual Level or the complexity with which he processes information; (2) Affective-value orientation, i.e. present position and latitude of acceptance on salient dimensions; (3) Motivational-incentive orientation, i.e. preferred form of feedback, optimal incentive conditions; and (4) Sensory orientation, i.e. preference for visual or auditory presentation.

Training intervention characteristics

From a matching model rationale, all training procedures are derived on the basis of information about the trainee and about the desired objectives. Planning for teacher training should not begin with a method, e.g. video feedback or a sensitivity training program, with the general assumption that it will be helpful to all trainees. Rather these procedures are seen as being differentially effective and useful for certain purposes at certain points with certain trainees. In order to maximize the fit between trainee characteristics and intervention procedures in two categories--content and form--to correspond generally to the two trainee categories, skill level and accessibility characteristics.

Content of intervention Mention should be made of the necessity of specifying the size and temporal unit of the intervention (cf. discussion in Hunt, 1968, pp. 13-15). The content will be determined by the skill component involved; and we have discussed procedures for producing skills in discrimination, radiating environments, and modulating in detail elsewhere (Hunt, 1966, pp. 144-145, 150-153). For example, if the objective is to facilitate skill in discriminating between behaviors, obviously part of the content must consist of student behaviors in some form or another.

Form of intervention Among the countless variations in intervention procedures, only those dimensions which will coordinate with trainee accessibility characteristics will be described.

1. Structure of presentation: This dimension is intended to encompass both features of the structured-flexible dimension in terms of the opportunity for the trainee to interact with the material in a more responsive fashion as well as the variation of the material on a simple-complex organization dimension. Several examples of measuring the characteristics of intervention procedures are available, e.g. environmental complexity (Schroder, Driver, & Streufert, 1967); structured-flexible program (Hunt & Hardt, 1967); reflective environment (Joyce & Hunt, 1967.)

2. Disparity between presentation and trainee's value position: As discussed elsewhere (Hunt, 1968, pp. 16-18), one of the most vital features in a matching model is specification of the optimal disparity between trainee orientation and presentation. The presentation cannot simply mirror the trainee's present position; on the other hand, the presentation cannot be too disparate or the trainee will not react to it. As implie~~d earlie~~r, the trainee's latitude of acceptance enters in as -- in any case, the central process involved is the arousal of interest and affect which leads to the acquisition of new skills through the experience of some disparity. For example, the Rosenthall "hidden bloomer" might be reversed and the trainee might be told that this kind of child cannot learn in order

to note the motivation-arousing consequences of such a presentation.

McClintock (1958) demonstrated, in a study relevant to the interplay between value of orientation and mode of presentation, that persons classified as high in other-directedness were more likely to be influenced in the direction of attitude change by an informational approach, but not by an approach aimed to give them insight into attitudes. However, when subjects were classified along the dimension of ego-defensiveness, moderate and, to a lesser extent, low ego-defenders were most influenced by such an interpretational approach. Finally, persons high in ego defense were most likely to change an attitude when confronted with an ethnocentric approach.

3. Form of feedback and reward: Feedback form and demensions of reward may vary considerably to coordinate with those dimensions suggested earlier on which trainees may vary. As an example, peer feedback and authority feedback would be related to procedures in which a supervising teacher or a fellow student reacted to the trainee's performance.

4. Modality of presentation: This dimension of intervention procedures is fairly straight forward. It might be noted that for certain purposes modalities other than the visual and auditory, i.e. tactile, should be explored.

A Matching Model for Guiding Decisions in Differential Training

Having described the dimensions on which trainee characteristics and those of intervention procedures may vary, we may combine them into a matching model for guiding the planning of deliberative intervention in the training of training agents. The model is summarized in Figure 2.

Relation between trainee skill level and content of presentation. The content of a presentation should be appropriate to the particular objectives and to the trainee's present skill level; some specific examples of this appropriateness within the training model have been suggested earlier (Hunt, 1966a). This paper focuses on the relation between trainee accessibility characteristics and form of presentation.

Relation between trainee cognitive orientation and structure of presentation. Structure of presentation should be gauged to the trainee's cognitive orientation primarily in terms of level of complexity, e.g., in the trainee is fairly high in CL, then the presentation can be organized in a fairly complex form. Secondarily, the form of prrsentation

Figure 2

Relation between trainee characteristics and
intervention characteristics

Trainee characteristis	Related intervention characteristic
Skill Level	Content of presentation
Cognitive orientation	Structure of presentation
Value orientation	Value context of presentation
Motivational orientation	Form of feedback and reward
Sensory orientation	Modality of presentation

should be organized to vary in terms of the opportunity for trainee exploration and independence. The higher the trainee's CL, the more the presentation should permit opportunity for exploration and reaction to a responsive environment.

Relation between trainee value orientation and the value context of presentation. As indicated earlier, the key to this relation is the degree of disparity optimal to affective arousal (discussed in Hunt 1968, pp. 16-18). It should be emphasized that there is insufficient evidence available at this time to warrant fixed prescriptions in this area. For example, it seems important to test the limits within which one can induce skill acquisition within a value-neutral context as Bereiter seems to suggest. The point is to find out more about its interactive effect with trainee position and latitude of acceptance, all the while, being guided by the only evidence available -- which comes almost entirely from the literature on changing attitudes through systematically presented communications.

Relation between trainee motivational orientation and form of feedback and reward. Here, the nature of the general combination is clear even if the specific prescriptions are somewhat hazy. Depending upon the degree to which the training intervention involves feedback or reward, one should focus analysis upon possible variations and attempt to make these variations as congruent as possible with the trainee's motivational orientation. Eventually, feedback for the teacher trainee may consist primarily of student reaction so that the direction of effects model proposed by Bell (1968) is likely to be useful.

Relation between trainee sensory orientation and modality of presentation. The prescription in this combination is simply to attempt to provide the optimal amount of congruence between the trainee and his preferred mode of receiving information with the mode of presentation.

In the next section we will attempt to illustrate the application of the model to increasing the flexibility of training agents. However, before proceeding to this application, some comment on the general nature of the model is in order. First, matching trainee accessibility characteristics with forms of presenation is obviously contingent on knowledge of the coordination of content with skill level. Put another way, we have assumed for purposes of emphasizing trainee accessibility that specific information is available about the precise nature of the content of presentation most likely to be relevant to increasing a particular skill component. Obviously, this is not always the case, and where information is lacking about the general content required, it will be difficult to apply the model; one cannot play variation on a theme which is non-existent. In a sense, the relation between trainee accessibility and mode of presentation can be considered to be "moderator variables" operating between the general content of presentation and change in trainee skill level.

Second, much work is needed to distinguish between trainee characteristics which correlate generally with the skill in question throughout various forms of intervention and trainee characteristics which correlate with likelihood of change. For example, Schrober and Talbot (1966, p. 12) in attempting to increase teaching flexibility through two forms of intervention, concluded that their results

> "indicated that the ability to sense and utilize another person's perspective in communication is a relatively stable personality characteristic which persists despite short-term lecture and vide feedback training methods."

Experimental investigations utilizing the present matching model will therefore not only need to control for initial trainee skill level in investigation the relation between change in skill level and trainee accessibility characteristics summarized in Table 2, but will also need to determine the initial relation between the trainee accessibility characteristic and skill level. Put another way, more investigations are required into correlates of what Lewin called plasticity, "the ease with which a relatively lasting and stable change can be made in the structure of a region" (Lewin, 1936, pp. 161-162).

Third, it should be noted that any matching model such as that proposed in Table 2 is simply a rough guide for planning intervention at a particular point in time, and as such, must be continually updated in light of changes which may occur in the trainee. Thus, different approaches may be required for the same person at different points in time. A major difference, for example, is likely to be in the person's motivational orientation. It is frequently observed that the introduction of an educational innovation (acquisition phase) is relatively easy, but providing conditions under which it will be continued (maintenance phase) is very difficult. Probably the most underemphasized reason for this difference lies in the training agent's need for novelty, relief from boredom, etc. These factors in the experienced teacher's motivational orientation are extremely important to consider in planning in-service training programs.

Application of model to increasing flexibility of training agents

Flexibility in teaching is, in many ways, like creativity in the learner: both are value-laden, generally desirable states which are usually very poorly specified and given inadequate operational definitions. For present purposes, we will follow Joyce and Hodges (1960, p. 409) who assert in their discussion of instructional flexibility training that "a teacher who can purposefully exhibit a wide range of teaching styles is potentially able to accomplish more than a teacher whose repertoire is relatively limited. From the viewpoint of the training model (Table 1) this definition of flexibility includes only the capacity to radiate a wide variety of environments and says nothing about the trainee's capacity to use one or the other under differentially appropriate circumstances. We take this relatively restricted definition of flexibility for present purposes because it is clearly a prerequisite to a more comprehensive form of flexibility and because it can be operationally defined.

Before proceeding, however, brief mention should be made of some of the reasons for difficulty in defining flexibility in teaching. In our discussion we are treating teaching behavior, or the radiating of an environment, essentially as a "response" evoked in some stimulus situation. Scott (1966) has provided a thorough critical analysis of the terms flexibility, rigidity and adaption from a stimulus-response view which can be applied to teaching behavior. Scott criticizes the non-operational acceptance of adaptability or flexibility as being desirable, and he provides a system for classifying various forms of response alteration which are differentially correlated with stimulus variation (in the present instance, variation in teaching behavior as a function of variation in learner behavior) e.g. stimulus tracking, spontaneous alteration. He pointed out that neither adaptation nor flexibility can be adequately defined only in terms of simply spontaneous variation (in the present context, radiating differential environments) nor in terms of stimulus tracking (in present terms, reacting immediately to change in learner behavior by altering the educational environment). Scott concludes by noting:

> "It is possible that adaption may best be facilitated if the person conceives of his various requirements in a hierarchy of importance, treating some of them as 'goals' or 'ultimate values' and others as 'means.' Then constancy or 'rigidity' may be adopted with respect to the goals, and flexibility with repect to the means. In terms of our behavior categories, this is to say that modification of the environment to meet the person's requirements is best accomplished if behavior patterns expressing ultimate goals are maintained relatively fixed in the face of changing circumstances, while means relevant behavior patterns display spontaneous variability and stimulus tracking." (p. 397)

Another way to view the complexity of defining flexibility in teaching is to consider teacher behavior in what Bell (1968) has called a "direction of effects" model. Using the parent-child interaction as the major paradigm, Bell pointed out that we almost always view this dyadic interchange in unilateral terms, i.e. the effect of the parent upon the child, without acknowledging that the child "pulls" differential responses from the parent. In the classroom, direction of effects simply emphasizes the common-sense notion that the learner affects the teacher's behavior (Turner, 1967). A comprehensive formulation of teacher flexibility must eventually take account of Scott's notions and of direction of effects. However, for the present, we will use the limited definition referred to above.

The specific objective, therefore, is that of producing the capability for radiating differential environments, let us say, reflective and structured (Hunt & Joyce, 1967). The first step in applying the model would be to assess the trainees's present skill level to determine whether or not he can radiate the same material in both a reflective and structured context. Assuming that the trainee cannot radiate these different environments, but is capable of making the prerequisite discriminations (Table 1) we can consider how to apply the model in Table 2 to planning such trainee-specific intervention.

1. Content of presentation. Material illustrating the two approaches, reflective and structured, should be available in a variety of forms: written, tape recorded, video-taped, theoretical context, etc. One example of the content for inducing two kinds of teaching is found in Shaver (1964) who attempted to induce the use of Socratic and recitation styles (which are roughly equivalent to reflective and structured environments). He gives some indication of what is needed for content:

> "The orientation of the teachers involved several steps: (1) General discussion of the two teaching styles as an integral part of the total research project; (2) the reading of a theoretical description of the two styles; (3) a session of approximately two hours spent in discussing points which needed clarification and problems which might arise in applying the theoretical models in the classroom situations; discuss specific problems which occurred in attempting to conform to the teaching styles." (p. 260)

2. Structure of presentation. If the trainee's cognitive orientation is relatively simple (low conceptual level), the presentation should be made in concrete terms, e.g. simply showing films or providing typescripts or demonstrations from which the trainee could model. If the trainee's cognitive orientation is more complex, then the conceptual, theoretical aspects of the presentation should be stressed.

3. Value context of presentation. Since there is a relation between value orientation and preferred style (Hunt, 1967) it is likely that trainees who are able to radiate only one environment, e.g. only use structured approach, may have a negative value toward the other environment. As we have discussed elsewhere (Weinstein, Joyce and Hunt, 1965; Hunt, 1967) this is especially likely to occur in trainees who may be considered "rigid liberals" or given to the belief that the only approach is a very reflective, open environment. Two procedures

for fromulating the value context are possible. One is the value-neutral approach of presenting the task of radiating a structured environment as simply a complex response to be acquired with no questions asked about its utilization. The other would seem to be an approach derived from the "latitude of acceptance" model in which, through discussion-theoretical reading, the possible efficacy of providing structure could be gradually presented.

4. Form of feedback and reward. If the trainee is more susceptible to peer influence and reinforcement than authority influence, clearly the presentation should be geared accordingly, and similarly with the trainee who is more susceptible to authority influence. For the trainee who is rigidly adherent to only the reflective approach it might be that an approach in which he was negatively reinforced for using only the reflective environment might be effective. An intervention procedure might be designed in which he was to provide the environmental conditions under which a learner would acquire a particular skill; the intervention procedure would be programmed so that the learner would not learn unless given structured experience.

5. Modality of presentation. It seems likely that the results of studies such as those of Schroder & Talbot (1966) which investigated the effectiveness of video feedback might shed light on this factor. When assessment procedures permit classification of trainees in terms of differential responsitivity, then the differential assignment of trainees to different modalities of presentation can be used.

Concluding comments

The present paper has described some trainee characteristics likely to be relevant to the conditions under which they will change. A general model was proposed to coordinate these trainee accessibility characteristics with the intervention procedures most likely to be effective. The prescriptions in the model for deriving trainee-specific forms of training intervention vary in terms of empirical support so that the model should be regarded as a provisional statement which will permit empirical exploration into the problem of developing differential training programs for the training of teacher as well as other training agents.

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Chapter Eight

The Teaching Laboratory: A School as the Center of Inquiry

To help someone become a teacher innovator requires the building of a setting in which he can learn to innovate. By now we all recognize how enormously difficult this is. Many of the great laboratory schools of another day have gone to rest and the laboratory schools of our day are roundly critized as teacher education centers on two widely disparate accounts. On the one hand they are critized for being "unrealistic" places where special conditions protect the young teacher from reality. On the other hand they are critized because they are not abnormal enough. It is suggested that except for these somewhat above average facilities, staffs, and students, they are not havens of innovation or of the study of teaching or learning. Whatever the truth is about laboratory schools it is clear that we have no easy formula for producing a place in which our teacher innovator can practice either his clinical skills or his capacity for studying teaching and learning.

Yet, we are convinced that teaching is an institutional as well as a personal thing. The institutional character, physical, social, and professional greatly limits or extends what the teacher is likely to want to do and what he is likely to be able to do. To provide one simple example we would draw the readers attention to the problems that are inherent in the normal staffing patterns of American public schools. In most schools teachers are given multiple functions that are almost impossible to accomplish effectively. The self-contained classroom teacher has to work in too many curriculum areas for him to maintain either academic or pedagogical competence. He cannot possibly master the disciplines that need to be known in order to enable him to function effectively. Both the self-contained classroom teacher and his departimentalized counterpart have not the capacity to process the information that is necessary to track individual differences in the classroom and if they had the capacity they do not have managerial skills to meet the individual needs that they would discover. The problems of reaching the personalities of from twenty-five to one hundred students are insurmountable. The multiple functions of classroom control or discipline, academic teaching, individualization and personalization of instruction, the mastery of many media and their utilization in teaching - all these things combine to create a really impossible situation. The reason that these conditions are tolerated is probably only because the public in the profession are so used to them that many people do not even realize how poor the institution is compared to what it could be today. When the school as an institution took its original form it was not an unreasonable event. Very few people went to school. Most people were highly motivated or could easily be dropped if they did not perform well. The only materials that we had for educating people were the crude text books and adult libraries. The pattern of education in elementary education was essentially to drill basic knowledge and skills. Hence the primary school was a scene of recitation and the secondary school was not much different. The early years of college were divided between lectures and independent reading and the later years of college and professional school consisted of seminars, independent study and apprenticeship to established professional men.

Individual differences were not considered except that the levels of education served to sift students so that fewer and fewer were present as one ascended the educational ladder. Failure to learn was attributed to laziness rather than any defect in the environment or difference of capacity on the part of the student. It was believed that each student could somehow learn, if he had the drive.

Over the years we have developed very different purposes for the school and we have tried to institute very different methods. We have tried to organize classrooms as miniature democracies and to provide instruction that is tailored to the individual needs and capacities of the student. We have tried to fill the environment with self-instructional devices and with technological assists to learning that bring vivid images of the real world into the school. The school has changed in many many ways. At least in the suburbs it is a brighter and more cheerful place to be. Teachers are better educated and they have available to them and to the students instructional materials prepared by the leading scholars in the nation. Changes in instructional materials and methods, however, have not been parallelled by changes in the staffing patterns of the school, and in many ways the institutional character resembles that of a century ago. The multi-purpose teacher persists and as yet there is no substantial supply of specialists for the elementary school. Teachers still work largely alone. They still have very little time for scholarly study and very few consultants are available to them either in pedapogy or the disciplines. Very few educational experiments are initiated by teachers or carried out by school personnel. Collegial teaching and study of teaching is a real rarity.

We are convinced that schooling is about as good as it will get until major changes are made in its organizational and social structure as well as the technological melieu. Teaching will remain at a largely intuitive level until it is carried on by teams of specialists who bring a range of high competence to teaching tasks and who work as collegial scholars, studying themselves and their learners. These teams will need to be as effective at institution-building as they are at teaching. With their students they will create schools as democratic societies, each with its distinctive character and climate emerges from the unique interaction of staff and students.

The creation of such a school is an essential part of the implementation of this teacher education program. No doubt many of the components of the program could be implemented without the school but they would be hollow creations and they do not seriously interest us. A true implementation of this program requires the creation of a school that can function as a "center of inquiry" into teaching and learning and which has the kind of flexible structure that lends itself to a variety of interesting laboratory experiences.

In the section that follows we describe two sets of specifications. One of these is for the character of the school itself and the second is for the steps that are required to bring such a school into existence. The ideas of the section were contributed by several people. Elizabeth Wilson and George Usdunsky of the Montgomery County, Md., public schools both developed positions on the problems of changing the institutional character of the school. Harold M. Schroder of Princeton University contributed ideas about the organization of staff. The conceptions of the school and the particular ideas about bringing it into existence are formulated by Robert Schaefer and Bruce Joyce, both of Teachers College.

The Character of the School

Our need is to develop a school which will do three things very well. Each of these three functions enhances the other ones so that the results rather than diffusing the effectiveness of the school will be to increase it. These three interacting functions of the school are:

1. to be a place where superior learning takes place
2. to operate in such a way that the processes of learning and teaching are studied continuously by the participants. (That is, by both the teachers and the learners.)
3. It has to serve as an effective setting for the laboratory work of the teacher candidates who need to practice institutional shaping activities. It signifies to them that one actually can build a school which will embrace innovation and the scholarly study of teaching and learning.

There are two latent or correlary functions embedded in the accomplishment of the first three. These are:

4. The school will be a model of a teaching-learning center - a school as a center of inquiry - which will operate as a guide to the teacher candidates when they attempt to develop educational institutions themselves. As such it will have to be a participatory democracy.
5. It is a setting for inservice education not a place where inservice education is an activity that is piled on to the ordinary activity of the teacher - but a place where the continuing components of our model teacher education program are natural and even necessary correlates of the active teaching itself.
These side effects are as important as the three main functions at the school but they are derived and there is no need to plan for them specifically since they flow naturally from the interactions of the other functions.

An Effective School

It is important that the inquiry school be an effective one because it would not be fair to children if it were otherwise. The scholarly and laboratory functions of the school need to be conducted in such a way as to enhance learning rather than to detract from it.

Because the faculty of the school are going to engage in the functions of studying teaching and learning and will help to prepare teachers candidates as well as teaching children the traditional organization of the public school will not be satisfactory. The usual organization of the school puts the teacher in direct contact with children nearly thirty hours a week, an amount of managerial and instructional time for which one cannot prepare adequately under normal conditions. To operate the school as a participatory democracy with community members and students playing more active roles in the determination of affairs, with extensive new teaching strategies to master, research studies to be carried out, and the preparation of teachers to be accomplished, the traditional responsibilities of the elementary teacher would simply not work.

There are two possible solutions to this. One of these is for the school to operate with master teachers who have large subordinate staffs which can enable them to accomplish their functions. This solution is embodied in the pamphlet, *Man, Media, and Machines* by Bruce Joyce (Washington: National Education Association, 1967). which gives a detailed description of teaching teams that operate in a matrix of support systems that serve them. A second solution is to organize the schools into teams which performs specific educational tasks which are highly specialized. In this solution teachers can do fewer things for the youngster.

The Multiple Systems Approach to Curriculum

Let us begin with several propositions that can be used to rethink staff utilization in the elementary school. The first idea is the idea of curriculum modes, or of learning settings that are characterized by particular relationships between the learner and his environment. The second proposition is the idea of curriculum systems, or groups of staff and technological devices that can be employed to carry out a curriculum mode. The third idea is that of taking a multiple systems approach to the restructuring of elementary education. Let us look at these three concepts in turn.

Curricular Modes

It is common-place to assert that different kinds of environment facilitate different kinds of learning, and it is equally familiar to say that the child needs more than one kind of learning while he is in school. For example: the child needs to master the basic symbolic processes of our culture, particularly he needs to learn to read and write effectively, and to handle number systems competently. The skills involved in doing these things can be analyzed rather precisely, and it is possible to build self-instructional systems, which can give different learners various alternatives for acquiring those skills. Or it is possible to assign each child to a tutor who leads the child toward competence, or it is possible to build self-instructional systems as in the case of language labs which are more or less prepackaged and self-administering. Still another approach is for groups of children to be organized in cooperative inquirers who attack the learning problems involved. Now by curriculum mode I refer to the characteristics of the approaches described above or any other educational environment. The tutorial mode, for example, is characterized by personal attention, warmth and affection usually, and a high degree of individualization. It depends upon the competence of the tutor and on the relationship he forms with the learner. The other modes are important in a different way. Let us look rather closely at three particular curriculum modes that have very wide applicability within the framework of goals that we usually find in the elementary school.

Three Curricular Modes

One kind can be called the cybernetic systems mode and is characterized by being made up of preplanned materials, largely automated, and usually using self-instruction by individuals or groups for whom instructional activities have been prescribed, perhaps by an automatic assessment system that also feeds back progress reports to the learner.

A second curricular mode involves individual counseling to help the learner structure his own educational goals and activities. Guidelines to continuity and sequence might be developed, the learner might be lead to encounter some kinds of preselected problem situations, but learning is seen as personal and the sequence of learning is developed as the student engages his environment.

A third curricular mode involves group inquiry in which the scholarly endeavor of the group and its interpersonal processes are included as subjects for study. The disciplines are learned by practicing them. Democratic process is valued. Feedback is collective and emergent. Content may be partly preselected and partly produced by active inquiry.

Each of these curricular modes can be adapted to perform unique and important functions in elementary education. Blended, they can offer a common general education, the development of personal talent, and the humanizing effects of cooperative inquiry into critical issues. Let us examine them by turn and then see how they can be used together.

The Cybernetic Systems Mode

We are more certain of some educational objectives than others. The Cybernetic mode is appropriate in areas of curriculum where:

1. We have relatively stable agreement about cognitive or skill objectives. That is to say, we are relatively sure that we want to accomplish the objectives and will want to accomplish them for some time to come. A good example is skill in the four fundamental operations with integers and rational numbers. For the next few years (not forever!) it seems safe to say that we want all possible children to develop reasonable proficiency in this area. Reading skills are another area in which we are sure that for some time to come all possible learners should be brought to a high criterion of competence. It is not necessary for elementary school faculties or individual teachers to decide annually that the arithmetic operations or reading skills will be taught. We can stablize these and certain other areas for a long period, as far as general objectives are concerned.

2. We are able to construct adequate self-instructional devices for the vast majority of students. "Self-instructional" should be broadly defined here. One can learn many things by reading about them. Hence, books are self-instructional devices. Programmed instruction should be included. Units using films, tapes, and other media have been developed.

Computerized games can teach many things. Simulation techniques will expand self-instructional possibilities greatly.

3. We can develop automated feedback systems for keeping the learners and responsible adults informed of progress. Programmed instruction has an edge here, because of the precision with which objectives are specified and ordered and the easy amenability of the process to "embedded" tests. However, precise automated evaluation is possible nearly anytime that objectives are clear and self-instruction is possible.

4. The area can be learned as well alone as in a group. Many aspects of social dancing might be acquired in response to films and computer-controlled instructions, but much of the appeal would be gone. On a more serious side, controversial issues, drama, and improving social and socio-intellectual skills require group activity for a good bit (rarely all) of the instruction. Learning map skills, on the other hand, does not require group interaction or very much didactic presentation by a teacher.

5. Pacing of instruction is importnat. For example again, many arithmetic and reading skills are achieved in any curriculum mode at enormously different rates. In fact, teachers working alone and with traditional materials and normal pupil-teacher ratios have been unable to achieve adequate individualization of instruction in most skill areas.

With respect to the social aspects of such a mode, the norms would stress independence and industriousness. Students would need to learn to judge their own progress and "reward themselves" for progress. An air of calm support and mutual help would be important, as well as openness about progress. Teachers would function as facilitators and trouble-shooters.

To summarize, where we have curricular objectives that are very stable but are achieved at varying rates, and where they can be achieved effectively by self-instruction that can be monitored by automated feedback systems we can apply cybernetic principles to create instructional programs. Such programs would not work for all students (no curricular mode does), and effective disgnosis would result in placing some children with tutors, remedial specialists, and teachers of groups, but self-instruction could work effectively for many. Subprofessional technicians can be prepared to work with the children and the feedback can be scrutinized constantly by a specialist who can sound the alarm for students for whom the program wasn't working.

Because of the negative reaction so many teachers have made to automation, we must stress again that the cybernetic curriculum need not be a deadly array of sequenced "programs." It can be a rich multi-media program diversely using film, games, books, programs, and other devices. Also -- it would not be appropriate for all parts of any curricular area. For example, while much science instruction might be automated, the cooperative attack on original problems could not be accomplished this way, and is important not because it is an efficient way to learn scientific facts! Further, the cybernetic mode would be under constant revision as objectives change and technology inproves.

The Personal Discovery Mode

The old story about Mark Hopkins and the log has long been the symbol for a delightful and wise teacher, the idea of having one's personal great teacher. We are always trying to find ways of giving students personal attention, whether by individualizing reading programs, providing guidance counselors, or making the opportunity to learn the French horn. The ratio of pupils to teachers has been against us, however, and so has the idea that the "curriculum" has got to be "covered."

Well, the cybernetic curriculum mode puts books and machines to work, freeing manpower for the development of curriculums devoted, not to the individualization of common learnings, but to the development of personal talents and interests. The idiosyncratic curriculum is appropriate for those ends which:

1. Are defined by the learner in his personal quest for understanding and self-development.
2. Need personal counselling to assure defintition and the availability of any special resources and advice which the learner needs.
3. While they might be achieved in group activity, they are accomplished socially only through interest groups in the generic sense of that term. In other words, where personal interests are congruent enough, group inquiry serves idiosyncrasy.

An idiosyncratic curriculum can be achieved by assigning students to a functionary we can call an academic counselor[1] who meets with each student regularly and helps them define personal education goals and the means for achieving them. In some cases he might serve as tutor. In other cases he might help the student to locate a teacher, resource person, community resource, or whatever would help. If a student were studying justice, the counselor might help him find a court where he could watch cases. If the child were interested in the French horn, the counselor would help arrange a teacher.

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[1] I am indebted to Charles Mansfield of Valley Winds School in Riverview Gardens, Missouri, for pointing out to me this term and some of the concepts it represents.

The counselor would help the child develop a program of wide personal reading (we didn't want him stopping with what we provide in the cybernetic curriculum). Also, the counselor would help him get together with others of similar interests. (It's not much fun putting on plays or learning modern dance by yourself.)

Our academic counselor would have overall charge of seeing that the child's life in school was a good one and that he received help with out-of-school problems. If he showed talent or creativity, the counselor would see that it received nourishment. If things weren't going well for the child in the cybernetic or group inquiry portions of the educational program, the counselor could be able to help -- to intervene drastically if necessary.

We might envision some teachers whose sole function would be academic counselor, each with an assigned quota of students. Available to them would be subject specialists of many kinds. Developing the functions of the academic counselor for the six and seven year old should provoke some interesting research, since so few people (relatively) have tried this sort of relationship with the younger child. It should be evident that such a mode would emphasize rewards for initiative and exploration. Seeking, probing, questioning would be highly valued. The technical support systems of such a mode would need to be responsive to the demands of a great many students seeking a great many ends. In other words a really effective modern multi-media library would be essential.

The personal discovery curriculum belongs to the student. It can exist in a school because of energy saved by the cybernetic curriculum. Both of these modes emphasize the learner as an individual. That is not all he is, however, so we need another curricular mode.

The Group Inquiry Curriculum

The inquiring group was at the core of the Progressive Movement's approach to education. The group of students, with their teachers, would learn democratic skills and scientific method simultaneously while they explored their world and developed commitment to the ideals of democracy. Until the academic curriculum projects began in the fifties the chief thrust for school reform was provided by the legatees of the Progressives. An overwhelming proportion of curriculum supervisors in the schools of today was influenced by this tradition.

Its Achilles' heel has always been its dependence on teachers of extraordinary skills. Given the supply of talent available to education, the demands made were simply too great for the average teacher. He could not know enough about enough things to handle groups well enough to cope with the range of educational objectives.

Nonetheless, group inquiry as a mode is extremely useful when:

1. Group skills and interdependence are to be acquired. The democratic way needs to be learned in situ.

2. The learner needs to test himself against the ideas of others. Controversial issues and contemporary social movements, for example, need the interplay of diverse reactions to events. Many kinds of thinking can be learned if one has to balance his ideas against those of others.

3. Group dynamics is an important learning agent. The power of the reference group, for example, can accomplish many things. The intellectual and social climate of the school is a consequence of group process. Students can teach each other a good deal about social life. Drama, debate, and sciencing depend on social feedback as well. Internation games require groups.

4. Individual differences are advantageous. In many areas learning would be dull and less energetic were it not for the interplay of individual differences. For example, a homogeneous group studying its society would probably develop much less vigor and heat than a heterogeneous one. Young artists learn more from each other when they differ, even in the development of their personal styles.

5. Efficiency in time is not a compelling consideration. The group can be slow. Its own process requires as much attention from the teacher as does the subject matter. Any member can slow down the rest.

Some group inquiry should be directed toward preselected topics. For example, every child should be part of a group studying his society's attempt to govern and shape itself. Other projects arise as a result of collective endeavor. Where mankind's common quest for humanity is central, however, where the self needs other selves for nourishment and to give to, the cooperative inquiry mode is superlative. It requires trained group leaders, however. In any one school it might be staffed with group leaders who consult subject specialists or who, among them, represent many academic persuasions. In cooperative inquiry the development of the social system is more prominent than in other curricular modes. Essentially, the method is the social system.

The Curricular System

Briefly let us look at the concept of Curricular System as the combination of staff and materials used to facilitate any curriculum mode. For example, let us draw on what has been said above. To carry on the cybernetic mode one needs a great many materials, he needs staff who will learn to be competent diagnosticians, and he needs a great many sub-profession personnel who can administer the systems and a very few remedial personnel who can operate to help children who do not seem to be learning from the usual approaches. The system then to facilitate that curriculum mode is characterized by materials produced outside the school, and these must be self-instructional material; characterized by diagnostic activity facilitated by trained diagnosticians and by the presence of remedial specialists who can provide alternatives when the system does not perform adequately.

The tutorial mode needs a system characterized by a plentiful supply of warm and sympathetic people who relate well to kids, and who operate within a structure that allows them to meet the children on a one to one basis. It also requires an inquiry center of a good sort, that is a library characterized by many types of learning materials on wide varieties of subjects and the facilities for children to show themselves films, select tapes to listen to, possibly draw on and utilize video tapes, as well as the most familiar types of materials.

The cooperative inquiry mode depends on skilled group leaders, teachers who handle groups of youngsters extremely well, help them get organized, and help them create their own education. Again these teachers and the children must be backed up by a good inquiry center, but the skilled leadership is the primary characteristic of the system.

It is probably apparent by now that in the traditional elementary school we have been using multipurpose teachers who have been called upon to carry all modes, and to do so very seldom in a context of materials to backup the kinds of education they were trying to produce. Our usual ways of organiing staff and material have served to inhibit each possible curriculum mode, but the constraints have been different in each case. For example, simply to be assigned to thirty children at one time, or to be part of a team which has 150 children assigned to it is to make it extremely difficult to do much tutoring effectively. Also unless the library can function as a random access data storage and retrieval system which one uses many media in addition to books and the inquiry of children, it is severely curtailed compared to what we can bring about if we build appropriate systems.

A Multiple-Systems Program

Imagine then a school in which there were three overlapping and interlocking curriculum modes. A cybernetic mode would be designed by experts, staffed by sub-professionals and a few specialists, and supplemented by tutorial and group instruction. In this mode stable objectives would be persued by self-instructional units administered to individuals (and groups, where appropriate). Feedback would be largely automated. Minimum performance would be achieved for all possible students.

A personal-discovery mode would be dedicated to personal talent, interests, and needs, would be staffed by academic counselors who would help the student identify objectives and means of achieving them. This mode would draw on subject specialists and self-instructional units where appropriate.

A group inquiry mode would be devoted to democratic values and skills, group processes, and especially to the cooperative quest for meaning and understanding. This mode would require expert group leaders, with subject specialists and self-instructional resources available where needed.

Subject area curriculums could be accomplished through each modality. Part of the reading curriculum, for example, can be accomplished in cybernetic self-instruction, part should be personal, and many reading-thinking skills require group settings. In the social studies many skills, facts, and principles can be self-taught, some require group analysis, and personal depth study is important.

If we develop multiple systems approaches to educational design, we can take advantage of the energy provided (and released) by the cybernetic mode to develop group inquiry and personal academic counseling to levels never before practical. For this reason and because of its precision and efficiency, the cybernetic mode may end up, contrary to fears of many, as a liberating and humanizing force after all.

The School as a Center of Inquiry

While the school orgainzation described above would facilitate learning by children, it also makes it easy to provide the conditions which are necessary if the faculty is to study teaching and learning.[1] Let us look at these conditions and at the structure of the school.

1. Time for study and reflection.
   The teams could easily be organized so that members have time for scholarly study, time to prepare for teaching, and time to plan their teaching as a research-like activity.

2. Development of Colleagueship and Colleague Authority.
   Team members can study each other's teaching and learner responses to that teaching. The teacher candidate members of the teams can assist this, using techniques from the Models of Teaching sub-component and the Research sub-component. (See chapter Ten-B and Thirteen-D).

3. The activities of the school can be carried on as if the underlying principles were hypotheses to be tested. The teacher does not teach and be done with it. He teaches with a principle of learning in mind and he gathers data which tests the validity of that idea. This requires that the school provide not only time to the teacher but consultants who can help him organize inquiry.

4. The school has to develop what Schafer calls an "admission of modest accomplishment".
   What this means is the realization that all teaching does not work and certainly does not work with all people. The process of inquiry will expose this fact. It will become very clear to everyone concerned that many learning activities do not work. In the average

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[1] Robert J. Schaefer. The School as a Center of Inquiry (New York: Harper, 1967).

> school it is easy to carry on a kind of pretense that teaching is effective and to avoid facing the sharp reality of failure. Pretense will not be so easy in a school which studies itself. The teacher specialists and in this school will take satisfaction from the study of learning and the attempt to improve education.

In the next section we describe a team of people that operate with a group of children and with many teams that have specialized functions and which manifest that spirit of inquiry that we have been describing.

The section is part of the pamphlet Man, Media, and Machines which describes the work of an instructional team which is supported by several centers: an inquiry center (much like an excellent library), a human relations center, a materials-creation center, a computer instruction center, a self-instruction center, and a guidance and evaluation center.

In this section we follow the team leader, Harvey Thompson, through a half-day of activity.

A Day With A Teacher
8 a.m., Oct. 22, Some Year in the Future

Harvey Thompson convenes the meeting of his direct instruction staff. The meeting is to discuss two aspects of the educational program. One involves a new project that involves the computer support center. Technicians at the computer center have developed a model store in which the economic activities of the store are simulated. Thompson, his staff, and the computer staff are engaged in working out ways that their students can use simulation to learn the economic principles that operate as a store purchases goods, sets prices, creates advertising programs, and organizes its personnel. The students are to learn the economic principles by making decisions in the game-type situation. As they make decisions about the price of a product, they will receive feedback on sales, and will be able to adjust prices, advertising, and other factors to see if they can increase the sales of the product.

This program has been successfully used with older children, and this is the first attempt to apply the technique to the seven-to-nine age bracket within this school district. Hence, one of the members of the evaluation center is observing the process and offering advice about the testing program. Also, the social science specialist from the independent inquiry center is working as an observer and consultant because, if the experiment works, the material may have use there. During their meeting, Thompson and his staff select twenty children who will take part in the first use of the system. If all goes well, the number of students who participate will be gradually increased. Although his instructional team has much help from the computer personnel, Thompson wants to proceed slowly so that his own team can train themselves to use the simulation effectively and to follow it up with instruction that does not take place in the center. He also wants to give George Bryant some practice and a chance to explore whether he wants to continue his program to prepare himself to be a specialist in computer applications.

The other project that the direct instruction team discusses is their fine arts program. Using resource visitors, the local art museum, and specialists from the creative arts and humanities staffs of the high school, they have developed a unit on Renaissance art aspects of the social studies program. Some of the staff have been having great difficulty discussing Renaissance art with the children, and they report that some of the children are not interested. They arrange for one of the museum specialists, who believes she is having great success with the children, to hold a demonstration later that day so staff can observe how she treats the content. Some of the members of the team are extremely dubious about the value of the unit in general, and Mary Mercer is assigned to discuss with the children their reactions to the program so that the team can get some more evidence about the children's reactions.

The meeting ends at 8:40 and Harvey Thompson prepares for a science discussion that he will lead at 9:00 a.m. Marge, assistant team leader, gathers Maureen, Tommy, and Joan (teacher assistants) about her, and until 9 a.m. they discuss some of the problems they are having in the reading program.

9 a.m.: Harvey Thompson leads a discussion, by ten children, of a science project. This group has built a static electricity generator and is conducting a set of experiments with it. Science is Thompson's own subject specialty, and he handles two project groups like this regularly, an advanced group (this one), and a group of rather difficult children whom he hopes to reach through their interest in science. During the present discussion, Tommy Allen observes Harvey, because he will be following up on what Harvey does during the rest of the week.

While Harvey's discussion goes on the rest of the team is deployed variously. Mary and Maureen have gone with quite a number of children to the independent inquiry center, where the children are selecting books for their independent reading program. Maureen and Mary are helping the children with the book selection, as are some of the staff in the independent inquiry center. Joan and Laura have gone with another group of children to the self-instructional center, where the children are working through self-instructional materials to develop reading skills. This program has been set up by Marge in consultation with the self-instruction support center, and it is Joan and Laura's job to administer the program to the children and to give them such personal help as they need. At the same time, Marge is working with a group of very slow readers who have not been responding to self-instructional materials. She has developed an experienced approach for them, which tailors their activities to their specific needs. George is watching the Computer Assisted Instruction technicians prepare the simulated store. Before the hour is over, Tommy leaves Harvey's discussion and sets up a large group instruction room for a current events film which will be shown during the next hour to many of the children. This film has been created by the materials creation center in response to requests from several intermediate age elementary teams, who were concerned that there were no sufficient materials available for current events instruction for children from seven to nine. They were convinced that many of the children of that age did not learn much from the commercial television newscasts, and that the films prepared weekly by local news agencies were also not well adapted to that age group. Consequently, during this year, the materials creation specialists are making a short newscast each week which is filmed and sent around to the schools where the direct instruction teams have access to it.

10 a.m.: Harvey and George, a teacher, are in the computer support center, watching their students operate the simulated store. The operation goes well. The children are able to cope with the problems that they are given, and they are excited with the work. The experience is so positive that the decision is made to continue with that group of children on a regular basis and then to begin to use the simulation with another group of children. Harvey makes arrangements to brief the computer staff fully on the social studies program that is the matrix for the use of the game simulation. Harvey and George begin to discuss ways of establishing relationships between the store game and the rest of the program. It is George's task to see that there is follow-up when the children get back under the wing of the direct instruction team.

Harvey also makes arrangements for two of the members of the computer support staff to bring the simulated store directly into the team suite after the trial period is over. He thinks the trials should be held in the center area, where he and the computer support staff can review and revise the materials. But, when they are to be made part of the social studies program and used on a regular basis, the simulation will be moved into the team suite.

Also, while he is there, Harvey discusses with the center director some new individualized developmental spelling programs that have just come on the market and have been brought to his attention by the director of the self-instruction center. Harvey has evidence that his students have been doing very well with those programs, and the director of the self-instruction center has informed him that, if computer assistance is added to the program, it can be used with teams throughout the school district.

Until the computer assistance is obtained, the program is restricted to the use of Harvey's team and perhaps one other team, because evaluation of student progress is so laborious.

10:50 a.m.: Harvey watches the end of the discussions of the current events films. The discussions are being conducted by Laura, Marge, Joan, and Maureen. Joan has made a tape recording of her session so that Harvey or Marge can help her analyze and improve her teaching. It is a matter of routine on the team that each week each member tapes or videotapes a lesson and then reviews it with one of the other members of the team. Also, the team routinely makes videotape recordings of large group presentations, and then determines whether to place them in the file in the inquiry center for later use.

The Inquiry School

and the Contact Laboratory

The setting described above is quite compatible with the kinds of contact laboratory experiences that are described in this proposal. Feedback teams can be assigned to teams in such a way as to permit much tutorial and small group teaching. By rotating feedback groups among teams they could get apprenticeship experience in the various curricula modes and by working in support systems they could develop competence in a large variety of technological systems. The faculty of such a school would be amenable to the use of the school as a base for the operation of the enrichment and remedial schools. Also, the development and execution of experimental units fits in with the operation of the school as a center of inquiry. Regular faculty members of the school working with the feedback groups could develop and carry out the units as described in the Interactive Teaching Component. Particularly, of course, internship in such a school would give the teacher candidate the opportunity to carry on his role as a teacher-innovator and to practice what he has learned in the institution-building component. Since there would be a teaching laboratory in the school, he could also continue the study of interactive teaching and the entire school faculty and its cadre of novice teachers would eventually, no doubt, become an extended reference group as described in the Innovator Component.

Creating the School: The Hard Part

The critical strategy in the creation of the school and probably any school that would try to serve the three functions that this one has to fulfill, is the development of an organizational plan that restricts the role of the teacher by focussing it on educational specialities. The reason this is essential is because if the teacher has too many functions he will be unable to engage in the continuing study of teaching and learning that is essential. Especially is this true in the inner-city. The control problems, the problems of relating to the community and to organizing the community to work with and for the school, problems of handling the learning difficulties of students who have been disadvantaged or who are punished by the main stream of the culture, all these things multiply exponentially the problems of creating new educational forms. As long as teachers have to control youngsters throughout a long day, teach several subjects or several aspects of subjects, individualize instruction, master several technological modes of instruction and carry on the various clerical functions to which they are assigned, there is very little hope of changing the schools substantially. The problem is not solved either by simply adding paraprofessionals into the situation and thus providing the teacher with a management function which would probably offset the additional help he receives. But by narrowing the duties of the teacher and making him a part of a team which shares those duties we enable him to get control over his professional life more effectively. The effect is that he can do a better teaching job as well as engage in the study of teaching and to assist in the preparation of new teachers. At the same time, by creating the role of academic counselor we provide for the personal need of the student to have his education tailored by someone who works very closely with him and administer to his particular needs.

Unless some alternate thesis of equal power is generated, then we maintain that the multiple systems approach to elementary education is a precondition of the creation of the inquiry school. It is the only system which we have been able to devise that changes teacher roles sufficiently and borrows time sufficiently to enable people to function at a level significantly better than the one at which they are presently operating. Too many laboratory schools have attempted to operate simply by developing better educational materials and better faculties and bringing them together, but with insufficient attention to the total design of the institution. It is on this design that we depend for successful implementation of the school.

The second element in the strategy is that the democratic school should be a place where the traditional educational functions are carried out effectively and in an obvious manner. In other words, the public has a need to find the school comprehensible and to be reassurred that the functions that it assigns to the schools are being well met. This job cannot be accomplished by public relations alone. The best way to convince the public that the school is doing a good job in basic education is to do a good job and do it in such a public way that everyone will recognize it. Too many times in the history of laboratory schools or experimental schools the school has opened under a banner which has favored certain educational ends to the exclusion of others. Many educators, for example, are convinced of the great need for reflective thinking, inductive sciencing, creative problem solving, and literary activity by students. These people have frequently tried to teach reading and arithmetic and study skills using techniques which are favorable to the development of creative and reflective thinking. The public in consequence has become worried that the basic skills would not be learned by the students, and despite monumental evidence that indirect teaching methods do not indeed reduce skill and knowledge learning the public has rejected the school. Our recent history is full of examples of experimental schools which have not been able to continue their operations because of this kind of problem of intelligibility.

Yet, the reformers have had great difficulty modifying their approach. Despite evidence that the direct methods produce about same results in skill teaching and in the acquisition of basic information as do indirect methods, they have nonetheless persisted in their arguments that the indirect methods should be used. The solution to this is a very simple one. The man-machine systems described in the section above are extremely efficient for teaching skills and basic information. Even in the primitive form in which they presently exist, they provide for an extremely high level of individualization of instruction. Our school is designed to use them partly because they are efficient, but partly because they are methods which the public will see as clearly appropriate to the objectives for which they are developed. In other words, the public will be assured that reading and arithmetic and writing are being taught by the most contemporary and efficient methods that have yet been devised.

A third element in the strategy is to organize the school from the beginning with a broad base of community and student participation in the development of the activities of the school. Each of the components of the educational program should have steering committees which are analogous to those which are provided in this teacher education program. Faculty, students and community members should participate in the governments of the activities. The school should have a steering committee of community leaders, student leaders and faculty leaders. Compared to the average school of today, it will have what Shaeffer calls "a reduction in executive authority" and an increase in "colleague authority" which is shared by community and students. There are several reasons for this element of strategy. In the first place it makes good sense educationally to have the client involved in the creation of his own education. Politically speaking, it provides linkages to those people who are most concerned for the direction of the school and who would be most likely to criticize it or have to defend it against criticism. In the third case (and most important from the point of view of bringing this kind of school into existence) it provides an environment in which all activities are made the subject of a continuous dialogue. Rather than seeing an administration pitted against the faculty or trying to "organize" the faculty into a democratic group, we begin with a democratic group in which the administration of the school is only one element. The school does not, in short, tolerate the possibility of an administrator who would not behave "democratically." From the beginning, then, the school as a center of inquiry operates at its organizational levels as school where a dialogue about teaching and learning takes place with all participants involved as needed.

Another element of strategy is to embed the teaching laboratory and the consultants for research into the organizational structure of the school. Not only the student teachers but the faculty should be organized in feedback teams who continue to study their teaching throughout their careers. To make an analogy with the teacher education program, the entire faculty should function as a set of inquiry groups and within these there should be feedback teams to which are attched the candidates from the teacher education program. These groups of people gather together to study teaching and learning as well as to carry it on. They observe one another's teaching, coach one another, study new models of learning, create new models of learning and test them out. In other words, the organization of the school has to be one of a center of inquiry rather than organizing the school simply to teach and then grafting on the organizational structures that will facilitate inquiry.

In-Service Preparation

The discussion of in-service preparation for opening such a school should begin with the admonition that one does not begin simply by recruiting a group of good teachers from more normal school settings, putting them together, and expecting them to create the school. The burden is too great. The several modes of instruction which need to be learned, preparation for working in teams, the use of contemporary technologies, the development of the capacity to study teaching and learning, the training necessary to use the teaching laboratory effectively, the special competence for working with teacher education students who are being prepared in a program such as the one we have developed; all these add up to an enormous burden of learning that should not go on simultaneous with the creation of the school. Hence, we recommend the following:

1. The teams should be organized well ahead of the beginning of the school, develop competence in the modes of instruction which they are going to specialize in and implement the modes in settings with small numbers of children until they are able to operate smoothly.

2. Simultaneously, the organization of the community, faculty, administration memberships of the steering committee and council should be made. The overall steering committee and the component steering committee should begin to function to develop organizational plans for the implementation of the components.

3. Practice in the teaching laboratories should begin and all teachers should go through the Interactive Teaching Component of this program.

4. The school should begin its first year operation with a limited number of students. During that year's operation the college faculty should work with the staff of the school to carry on the initial studies of teaching and learning to get the experience of doing research. A limited number of feedback teams of Teacher-Candidates should be attached to each instructional team in order

to provide a ready reservoir of replacements as staff attrition occurs before the second year. (One of the very serious problems in maintaining laboratory or experimental schools has been that of attrition among the staff, which is nearly normal for the profession as a whole. Nearly the entire school staff population turns over every four or five years. There is, of course, a core of people who tend to stay for a long period of time. However, the burden of replacement gradually erodes the original purposes and modes of the school. By beginning with small numbers of feedback groups the school will be better enabled to survive its early years and continue.)

5. The school should be operated by a cooperative university-public school-community agency-teacher association-coalition with an understanding by all parties of the basic functions which we have outlined for the school but with other matters of governance being under the control of the joint agency. Elizabeth Wilson's paper in the appendix of this section describes the rationale and method of developing a consortium for the purposes of operating a laboratory school.

6. During the operation of the school when it is desired to build a new support system or a new mode of learning, a team should be identified which will train itself to carry on that new operation. An entire inquiry group or perhaps one or two feedback teams from the teacher education program could be tied to the new planning team for the year. In the course of a year they would build the requisite learning materials, practice the required teaching maneuvers and models, design the initial experiments, and carry on pilot studies with small groups of children. It would not take an entire year to prepare any given support system or even to institute any new curricular or technological mode, but the organization should develop the kind of flexibility that will enable extensive preparation to be made and the development of any extensive activity should only be done by staff which is released from normal teaching duties.

EXPENSE

The school will be fairly expensive. But even from a cost point of view it will probably be a long run economy. In the first place it will be a setting where new instructional methods can be tried out and improved before their introduction into the larger educational arena. This function will sift out procedures which should not be tried on the larger scene at all. Just as important, it will enable the local educators to find out what it takes to implement a new innovation. At present enormous amounts of time and money are being wasted on innovations in education not only because some of them turn out not to have been worth implementing in the first place, but because still others are being implemented before enough is known about the in-service education that is necessary and the other kinds of preparation that must be made before the school setting will absorb the innovation effectively. This school will help to reduce that kind of inefficiency. It will also be a place where many interesting and efficient modes of learning can be re-developed so that they will be effective. For example, American education has not yet begun to explore the possibilities in educational television. In this Inquiry School, programs can be prepared and tried out and improved until greater use is made of this efficient and exciting media. Similarily, data storage and retrieval systems which permit children to control the direction of their inquiry[1] have now reached the point where, after a suitable incubation period in schools which function as the one we have been describing, they can be introduced into the school systems as a whole. Other examples are numerous.

Further, this school will be a training ground in innovation. Its alumni will be able to serve other schools in many ways, helping to bring into existence new educational forms, to set up new support systems, create research and evaluation programs and in many other ways work to improve education.

The Problem of Large Numbers

Is it feasible to build enough schools of this kind and staff them when one is faced with the problem of preparing several hundred teachers a year? There are a number of ways of approaching this pertinent question. In the first place, it is probably not possible to think of starting off to prepare hundreds of teacher innovators. There are simply too many things which would have to be changed to do the job. However, a couple of Inquiry Schools, serving children aged three to eighteen or so and with an enrollment of about 2500 children, could serve as the preparation grounds for a very large number of teacher innovators. The teacher education program we have developed does not include a student teaching experience of the traditional kind. The traditional student teaching experience requires a great number of teachers (at least one for every two student teachers) whereas in the Teacher-Innovator Program the teacher candidates are assigned to contact laboratories in feedback teams of from three to six. It is not expected that a team would be assigned to a large group of children in the traditional manner of student teaching. Much of their contact laboratory is in tutorial or small group teaching. (See Chapter Fourteen B for a complete description.) A school of 2500 children could, if its other facilities permitted, handle two or three hundred teacher preparation students whose contact laboratory experiences were distributed over a period of two years. The reason for this is that most of their activity is in the analysis of teaching, the analysis of social systems of the classroom, the development of technological systems, watching each other teach and coaching each other, and engaging in direct teaching that is always designed to test an idea, try out a model, demonstrate a technique and the like. There is high efficiency to this experience in terms of the amount of value that is squeezed out of relatively few contact hours with children. For example, a person may teach for 20 minutes and analyze the episode four or five times before he tries what is essentially the same strategy again for what is only fifteen or twenty minutes.

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[1] See: Bruce Joyce, "Social Sciencing with Children." Instructor Magazine, October, 1968.

Appendix: Chapter Eight

Can the School Become a Center of Inquiry?

A Design for Institution Building

by

Elizabeth C. Wilson
Montgomery County Public Schools

Introduction: The Case of the Punjab

The Washington Post for Thursday, July 11, 1968 carried the following story:

> The farm revolution in the Ludhaina district of Punjab State--and revolution is a just word for a wheat output that has more than tripled and a harvest of all food grains that has more than doubled in seven years--can be traced to a remarkable conjunction of people, technology, and wise policy.
>
> The people are the Punjab's Sikh farmers, an extraordinary breed of aggressive, hard-working Indians, eager to seize on new techniques to better their lot .... The most important (scientific breakthrough) has been the high-yielding strains of wheat developed by the Rockefeller Foundation in Mexico.... Moreover, agronomists at Ludhaina's Punjab Agricultural University have themselves developed improved strains of Mexican wheat that raised the average yield (from 2,000) to 4,000 pounds.[1]

Why did this breakthrough occur in the Punjab? What were the components? What can we learn from an agricultural revolution in the far-off Punjab which has relevance for the problem of creating the school which is a center of inquiry?[2]

What does it take to rebuild an ancient and honorable institution like farming or like the school?

The Punjab "miracle", it seems, depends upon the existence of many interlocking factors and events. We should note that the Punjab had already done a big job on the irrigation of land--seventy per cent is now irrigated. The farmers suddenly found themselves relatively free from their traditional dependence upon the monsoon. Similarly the Punjabi have what one dealer there called "tractor-mania." Ludhaina, at this point, has 3,000 tractors working for it--an enormous number of machines for an underdeveloped nation. We should observe that the Ford Foundation, after an intensive study by experts, published a report in 1958 which "urged India to focus its resources on some promising farm districts that would serve as models for the nation."[1] We should add the fact that an existing agricultural college transformed itself into a university and extended its functions to include research, and the training and staffing of village specialists who in turn instructed new generations of experts.

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[1] The Washington Post, Thursday, July 11, 1968.

[2] Robert J. Schaeffer, The School as a Center of Inquiry (New York: Harper and Row, 1967).

Another ingredient included the cooperation of the Punjab State which put fifty extension workers into the villages of Ludhaina to work with the specialists and supported prices so that the farmers got handsome and stable rewards for their hard work and acceptance of change. Financial support has also been supplied by U. S. aid dollars, which provided farmers with the credit necessary to buy the required new seed and fertilizer.

And finally we return to the people of the Punjab themselves--their aggressiveness, their physical capacity, their general ethos--particularly their self pride. How quickly the revolution, well started in the Punjab, will spread across all of India remains to be seen. The author of the article, however, concludes by saying, "But the new techniques and the new seeds appear to be irresistible. It now takes a very reckless prophet indeed to forecast the inevitability of famine in India."[2]

Perhaps the author is too hopeful. On the other hand, perhaps optimism built upon some successes is an important frame of mind for would-be institution builders. And if analysis of the Punjab's experience has transferability for the school world, there are other vital elements. A history of successful experimentation, familiarity with an enthusiasm for technology, and an aggressive tough-mindedness seem to characterize the local setting. A collection of cooperating institutions with varieties of expertise appears necessary. So also does the ability to find, use, and adapt existing scientific knowledge and technology. We should not overlook the funding from a variety of sources--monies which made possible continued support of the total complex as well as stable rewards for the innovators. Nor should we forget time and space factors. It was ten years after the Ford report before the task for one district in one province really broke the institutional change barrier.

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[1] The Washington Post, July 11, 1968.

[2] Ibid.

Thus, institutional change, even when the ends and means of that institution are concrete, easily observable, and relatively simple, requires an extraordinarily complex series of reinforcing agents upon a small target. Making the school a center of inquiry calls for an even larger order of magnitude--a concentration of many resources. Maybe we do not yet have the knowledge or the material or the fortitude to design and create the "critical mass" essential for the conception, gestation, birth, and growth process of Schaeffer's dream school. We are, however, reminded of Alfred North Whitehead's remark, recently featured by Westinghouse Broadcasting Company, namely: "Ideas won't keep. Something must be done about them."[1]

The Plight of the Schools: Recent Political Dimensions

Well over ten years have elapsed since Sputnick and the frantic outcry of the public about the inadequacy of our schools. That event and its immediate aftermath climaxed a series of increasingly strident criticisms of the public schools and paved the way for the so-called curriculum reform movement. That movement, now no longer a baby, was to put some backbone into the curriculum and shape up the schools by sponsoring creative marriages between great scholars and great teachers. These marriages, well endowed with material resources, did in fact produce offspring which are provocative and several light years away from the everyday curriculum in practice in the majority of public schools across the nation. Yet despite these curricular innovations, some ideas about organizational change within the school, and some minor flirting with architectural design and TV, the basic contour lines of the public schools have remained remarkably untouched. The same statements hold true for the majority of teacher training establishments.

Oddly enough, it seems as if the more polished the new curriculum and the better organized the packages, the farther off stage these ideas and materials get pushed. On center stage now are power struggles of one kind or another--in short, the revolt of the underdog both socially and academically. Thus the last several years have been characterized by an increasing cry for autonomy. It takes the form of black power, of parents demanding control of local schools, of teacher militancy, of student militancy, starting at the university and seeping now into the high schools.

No longer is it possible to look to the university as a model and savior of the flagging public schools. It too has feet of clay. In fact, as an aside, it could be that the kind of cooperative relationship between schools and colleges fostered and required by the National Science Foundation has aspects of the blind leading the blind. It could be that the university professor knows no more about relevant curriculum than the public school teacher--maybe less.

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[1] _Time_, July 26, 1968, pp. 12-13.

Indeed, it is at our best academic and scholarly universities where the strikes are most strident. Furthermore, our elite universities working with bright imaginative young people often untainted by schools of education have not had much impact even in wealthy suburban districts much less made a dent on ghetto school problems. A beautiful case study of the latter called "The Short, Happy Life of the Adams-Morgan Community School Project,"[1] may be found in the last issue of the Harvard Educational Review.[1] Paul Lauter, author of that article, is to be commended for his willingness to make a thorough autopsy of the project. (Such dissections are real innovations in the educational world.) The project was undertaken in the hopes that a series of major social and educational issues could be solved by bringing to bear on the problem an experimental set of liberal arts colleges, some new unorthodox staff, and a community and school presumably interested in changing its face. A brave hope it was, but the issues were much more complex than had been anticipated by the liberal groups working on the project. The erstwhile director ends his article as follows:

> There are endless years of social frustration and anger now being played out in the educational arena. It is hard to see how the fundamental issues of racism and exploitation in this country can be resolved in the schools--especially when they have not been resolved in Congress or the courts. Neither can the educational issues--of curriculum ... for example--be resolved simply by political decisions about who controls, or seems to control, the schools... The issues of community participation, teachers' attitude and preparation, classroom organization and curriculum, and the roles of outside agencies all must be worked out together or the educational fabric will unravel almost as quickly as it is stitched.[2]

And so, conventional wisdom concerning what to do about the schools has had several rude shocks. Time-honored ideas like redoing the curriculum, getting some new good teachers educated outside the establishment, and, above all, giving the power to liberal university elements divorced from the existing bureaucracies, have been tried and found wanting. Ten years ago the idea of a complete redesign of both schools and colleges would have fallen on deaf ears. Today if either institution is to stay alive, the whole complex must be reexamined from head to toe. At the least, some well-defined exploratory probes on a small scale could ascertain whether the disease can be treated or whether the condition is so far advanced as to be inoperable.

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[1] Paul Lauter, "The Short, Happy Life of the Adams-Morgan Community School Project," Harvard Educational Review, Volume 38, November 2, 1968, pp. 235-262.

[2] Ibid., p. 262.

Some Operating Assumptions and Obstacles

What is the state of art? What assumptions or ideas exist which may be used? What obstacles will be encountered? Such an engineering endeavor is surely more of an art than a science, but that fact does not mean that the foundations upon which an operational plan is developed need to be irrational. The discussions which follow are an attempt to pinpoint the ideas which are relevant and the roadblocks which must be considered.

Creating the school as a center of inquiry means changing the the whole institution. This assumption is implicit in the title of this essay, and in all that has preceded this section of the article. It demands a systems approach to the task--a systems approach in its generic sense including the school for children and the school system to which it belongs, together with the school for teachers and the academic community of which it is a part.

Tinkering with one piece of the whole or another has, as we have learned the hard way, not produced the revolutionary results which are needed. Further, when one section of the whole "gets ahead" of another in complex institutions or social phenomena, there is inherent difficulty. The introduction of modern medicine into under-developed countries with resultant huge population growth is a case in point. Similarly, within the life of a given institution, while one department or office or school or individual may periodically take great leaps forward, that phenomenon has no lasting impact upon the institution unless the movement is accompanied by some pulling of the whole with it.

Actually it is not the system qua system which needs changing since it is probable that the schools of tomorrow will require the kind of support and differentiation of function which necessitates complex organization. In other words, there seems to be no way in the modern world to get away from systems as such. Rather the problem is to redo the system so that it focuses upon its primary task rather than simply upon maintaining itself. It is the monolithic and homeostatic quality of the school system and the school as a part of that system which must be attacked.

In a very real sense a good performance by one part of a large social institution or organization often disrupts the whole. All organizations, even the best of them, behave in an irrational fashion much of the time. That is to say, they are busy taking care of the needs of the group rather than focusing group energy upon the primary task. These covert processes get in the way of the work of the organization. Such hidden agenda becomes more and more the order of business as groups become more and more threatened.

Notice that the task of creating a school which is "systematically reflective about its work"[1] requires an upheaval of existing attitudes and beliefs. So does the development of a colleague relation between scholar-teachers and college professors as envisioned by Dean Schaeffer. The world to be created is an unfamiliar and thus a frightening one. Both types of teachers will feel less competent than they do now. This fact, plus the intrinsic difficulty of changing beliefs and attitudes, must be considered as the model for institution building is planned.

Related to the security needs noted above is the familiar socio-political phenomenon of the assassination of the leader. When a leader really pushes a group and/or an institution toward change, particularly if he is successful in keeping the organization focused upon its central mission, his tenure as a leader is often short-lived. In other words, the forces of conservatism and security-seeking within the group often catch up with him and make his sacrifice upon the altar of change almost inevitable. Perhaps the most dramatic phenomenon of this kind may be found in the short administrative lives of the cabinet members ruling over large governmental bureaucracies in Washington. Those cabinet members who actually move programs forward or succeed in changing the power structure within a bureaucracy, almost always are committing political suicide.

The political dimension of educational institution changing has never been given the credit it deserves. Somehow students of the schools and of the educational process have wished to sweep that component under the rug, or, if it is recognized, to consider it a dirty part of the job.

We are reminded of the remarks made by M. Jean-Jacques Servan-Schreiber concerning European reluctance to examine its industrial weaknesses. The French publisher and political analyst says:

> ... we have to realize that politics is more than the short-term adjustment of power and of interest groups.
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> ...
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> There is no doubt that the problem is political.... Political rigidity and self-defensive reflexes act as a break on change, often dramatically so. Technological

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[1] Robert J. Schaeffer, op. cit., p. 1.

> aptitude is not what is missing, but the will to change the rules of the social game....[1]

The conventional wisdom in educational research and evaluation has often hindered progress on the part of a school or school system. The education profession has become so nervous about itself and its place in the world that it has been unwilling to move away from the narrowly objective and descriptive instrumentation believed to be "scientific." As a result we have too often focused only on that which can be accurately measured or quantified and lost track of bigger issues. These require all the rational faculties we can muster but because they are outside of the data processing orbit they are downgraded by educational leaders. Robert B. Davis, Director of the Madison Project in Mathematics, suggests that we have been:

> ...clinging to scientific generalizations, which provide a safe buffer between educational research and the problems of practical reality. What is needed is something more like an Arthur Schlesinger, a Walter Lippman, a James Reston, or a Harrison Salisbury. We are here more in the domain of the historian, the journalist, or what Allan Dulles has called the "craft of intelligence."...If we cannot begin to cope with such data, then education, (which probably ranks second only to defense among major industries in the United States) seems destined forever to elude systematic study.[2]

Davis notes the candor with which certain hospitals have managed to study themselves and wishes that schools could engage in the same kinds of reality testing. He angrily asks, "Are we too polite (or too lacking in courage) to tell the truth when, in fact, we know it?"[3]

Davis perhaps forgets that the medical profession has arrived as a profession and has the kind of professional and social status which permits it to be less defensive than the school teacher and educationalist. Teaching is indeed an underdeveloped profession and needs face-saving devices just as do our less fortunate colleagues in the proud but poor nations of the world.

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[1] Jean-Jacques Servan-Schreiber, "The American Challenge." *Harper's Magazine*, July, 1968, p. 41.

[2] Robert B. Davis, *Mathematics Teaching--With Special Reference to Epistemological Problems*, Monograph Number 1, Fall 1967, *Journal of Research and Development in Education*, Athens, Georgia, p. 50.

[3] *Ibid.*, pp. 52-53.

Building a new institution out of an old one is an extraordinarily difficult task. In fact it may be impossible. An institution attempting to do this needs every kind of support and help that it can get materially, socially, politically, psychologically. It probably has no chance of succeeding unless leverage is applied from outside of the institution and unless some catalytic agents exist both within and without the institutions in question.

Schaeffer's idea requires the recreation of the school so that the new school may serve not only as a major agent in the education and re-education of teachers, but also in the advancement of knowledge about the teaching/learning process and the change process in schools. The creation of this heuristic school will, according to Schaeffer, grow out of a "sustained school-university collaboration."[1] This joint school and university collaboration will affect the nature of the teacher training institution or university as well as the school proper. If we use the terms as they are defined by David Clark and Egon Guba,[2] experts in the study of educational change, there will in effect be two target systems: (1) the school or school system and (2) the college or university which has heretofore assumed the major responsibility for the education of teachers.

Schaeffer also is promoting the development of scholar-teachers who will take the leadership in creating the school as a center of inquiry. These teacher-scholars or change agents and innovators would be supplied by both the schools and by the collaborating university.

In addition, we are talking about the invention and development of a change mechanism. It is very likely that the teacher-scholars or change agents who are part of the change mechanism will need to be reasonably at home in both camps. Indeed, if Clark and Guba are correct, the task of recreating a new institution "may call into play a complex interaction of intra and extra system individual and institutional changes."[3] Change strategies in these instances must be supported by as much power as can be organized.

This paper posits the hypothesis that the complexity of the task, the need for support to both target systems during the process of change, *and the provision of retreat from the pychological heat generated by the change* within either institution *requires a new base of operations*. *Such a base of operations we see as a semi-autonomous inter-agency complex*, created and sustained by both of the target institutions, but having enough power and autonomy to serve as an escape valve and as a catalyst and support system for both institutions.

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[1] Robert Schaeffer, *op cit*., p. 75

[2] *Vide* David L. Clark and Egon G. Guba, "An Examination of Potential Change Roles in Education," Essay Six in *Rational Planning in Curriculum Instruction* (Washington, D.C.: NEA, Center for the Study of Instruction, 1967), p. 115.

[3] *Ibid*., p. 114

We return to Clark and Guba for advice about the way in which such an agency might be organized. They state:

> Colleges and universities must come to recognize development activities in education as a legitimate function of the institution similar to their development programs in engineering and agriculture. They must accept a role as one agency in an inter-agency complex attacking these problems and should probably be prepared to organize some type of functional unit to carry out this responsibility....Local school districts....should initiate and participate actively in inter-agency development compacts, and provide substantial released time for the best of their own personnel....to perform as development team members.[4]

The primary function of this new institution is institution building, not of itself, but of others. Its main task is to create a series of different models of schools which can serve as centers of inquiry in the Schaeffer sense of that phrase, and simultaneously to redesign the two parent institutions so that they generate rather than prevent the growth of inquiring schools.

The primary goal of the new institution builder and the schools it creates is the development and use of conceptual schemes or what Robert B. Davis calls "paradigms." From the writer's point of view, they are like James' ideas--ideas which:

> ...help us to get into satisfactory relation with other parts of our experience, to summarize them and get about among them by conceptual short-cuts instead of following the interminable succession of particular phenomena.[5]

Bruce Joyce calls the building and use of such conceptualizations the ability to "de-center" from the concrete phenomena which fill every waking moment of the practitioner's life.

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[4] *Ibid.*, pp. 127-128

[5] William James, *Essays in Pragmatism* (New York: Hafner Publishing Company, 1955), pp. 147-148

Davis feels that orienting frame work of paradigms:

> ...come in all sizes, from something as small as a self-consistent philosophy of one man to something as large as a system of orthodox belief and orthodox practice shared by an entire generation of scholars. Probably for our present purposes in education, we can make do with more-or-less "medium-sized" paradigms."[6]

It is no accident that most of the analogies used in this essay come from architecture and engineering, or medicine. They are applied arts and sciences which have accumulated enough workable concepts and paradigms and theories to make up a respectable body of professional knowledge. Education desperately needs the same kind of knowledge to save the practitioner from the mindless empiricism which characterizes the present state of the art.

The present state of the art, however, is such that we are nowhere near an "umbrella conceptualization of education which embraces all of the present approaches and important ideas...A given venture should commit itself to a definite paradigm, conduct its educational programs..., develop its theory..., and assess its results within that paradigm."[7] Diversity of models and programs is essential. It may even prove to be desirable in the long run.

The material Professor Davis quotes from Thomas S. Kuhn is as relevant here as it was at a recent conference on the Teaching of Mathematics and Science. We repeat as follows:

> ...Like the choice between competing political institutions, that between competing paradigms proves to be a choice between incompatible modes of community life. Because it has that character, the choice is not and cannot be determined merely by the evaluative procedures characteristic of normal science, for these depend in part upon a particular paradigm, and that paradigm is at issue. When paradigms enter, as they must, into a debate about paradigm choice, their role is necessarily circular. Each group uses its own paradigm to argue in that paradigm's defense.

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[6] Robert B. Davis, "Can We Organize the Content, the Children, the Adults, and the Resources?" A position paper prepared for a conference on the Teaching of Mathematics and Science in Elementary Schools, Belmont, Maryland, June 1968, pp. 15 and 16 (mimeographed)

[7] Ibid., p. 48

> The resulting circularity does not, of course, make the arguments wrong or even ineffectual... Yet, whatever its force, the status of the circular argument is only that of persuasion. It cannot be logically or even probabilistically compelling for those who refuse to step into the circle. The premises and values shared by the two parties to a debate are not sufficiently extensive for that. As in political revolutions, so in paradigm choice--there is no standard higher than the assent of the relevant community.[8]

The public school is highly dependent upon the "assent of the relevant community." That community is not the scientific community to which Professor Kuhn refers. But it is, we dare say, considerably more diverse in basic values and assumptions. We repeat: A series of school models is imperative.

Guidelines for Action

Selection of Site

Let us return now to the case of the Punjab. That "miracle," we note, occurred in a place already favored by the aggressiveness of its people, by the existence of considerable technological know-how on the part of the farming community, and by the bringing together of already progressively oriented governmental and university groups. We propose to follow the Punjabi example and to choose a university and a school system already known for their readiness to move, for their collective brains, and for a history of successful innovation. In other words, the institutions hopefully represent strength and not weakness in both mental and material ways. The task will be difficult enough at best. It is therefore very important that initial moves take place where there is some possibility of success--not necessarily where the need is the greatest. If a first experience proves successful, the project may wish to take on larger adversaries.

Organization and Staffing of the Institution Builder

There are no precise examples or models of the new institutional arrangements we are here promoting, but there are institutes and teaching and learning centers which bear careful study and examination. For example, it would be interesting to study the genesis and present organizational structure of the Ontario Institute for Studies in Education. That independent organization grew out of the activities of a curriculum group allied with a large teacher organization and later added and incorporated into itself the Departments of Educational Research and Graduate Studies of the Ontario College of Education. Undoubtedly, the Ontario Institute is a much more formal and formidable kind of an institution than is needed or wanted at the beginning of this enterprise. It does, however, represent an unusual alliance between scholar-teachers and a graduate center. Of interest also is the fact that the Ontario Institute grew in Canada's wealthiest and most progressive province.

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[8] Thomas S. Kuhn, The Structure of Scientific Resolutions, (Chicago: University of Chicago Press, 1962), pp. 89-93

A plan which combines some of the components of this proposed institution builder may be found in the Center for Instruction's Rational Planning in Curriculum and Instruction, in an essay entitled "A Model for Action." The consortium there outlined had the task of developing "settings in which the rational planning of curriculum and instruction can be studied in operation and through which a nucleus of catalytic agents may be identified and nurtured."[9] That proposal (not funded) also envisioned a new kind of educational cooperative consisting of

> ...a small headquarters unit with ready access to scholar-consultants in the fields of curriculum and instruction and to an established dissemination network, four school systems whose discrete problems and programs represents those most often encountered throughout the country, and a group of observers from schools in settings similar to the testing sites.[10]

This conceptual scheme also took note of a variety of curriculum and teaching paradigms, which were to be screened for local relevance, suitability, and feasibility by a moving group of scholar-consultants and school site personnel. Pilot sites, in turn, were to be serviced by a small headquarters unit which acted as a link between the scholars and the schools as well as a coordinating and communication center for the whole.

Other similar inter-agency complexes include the League of Cooperating Schools allied with the University of California at Los Angeles and the IDEA complex of the Sloan-Kettering Foundation, the Center for Coordinated Education in Santa Barbara, and possibly some of the new regional laboratories.

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[9] Elizabeth C. Wilson, "A Model for Action," in Rational Planning in Curriculum and Instruction (Washington, D.C.: Center for the Study of Instruction, NEA, 1967), p. 173

[10] Ibid., p. 161

Another important component in this organization is the kind of teacher support center described by Bruce Joyce in his *Man, Media, and Machines*. These instructional support centers include "specialists who create or organize instructional materials and programs for direct-instruction teams and provide consultant help."[11] The specialists are both professionals and para-professionals and possibly work out of what might be called a "souped-up" instructional materials center. That center contains a computer support center, a self-instruction center, an inquiry center, a materials creation center, a human relations center, and a guidance and evaluation center.

Other teacher center models also provide support for teachers and time for them to plan and organize their living. Larry Cuban in an article in the *Washington Post* dated Sunday, May 5, 1968 recommends for Washington, D.C.:

> ...eight to ten Staff Development Centers, each with a contractual university affiliation located in or near the schools. The staff for each center would include supervisors and curriculum specialists (heretofore assigned to central offices); experienced teachers (assignment to an SCD would mean promotion yet continuation of classroom teaching, thereby creating a career slot above that of teacher); university staff; clinical psychologist; a social worker; and a community organizer. The staff would teach. observe, confer, and provide assistance to the principals and teachers of the immediate area, being always accessible and visible to school and community.

Cuban's description is reminiscent of teacher centers established in England which have been very successful in moving innovative practices into some of the schools in the United Kingdom. Those centers, run by teachers, sponsor local teacher study groups and provide both material assistance and the opportunity for Schaeffer's "productive colleagueship."

In addition to teacher support centers in the Joyce sense, the better schools are increasingly developing learning centers for children. Such centers are supported again from a sophisticated instructional materials center and probably would contain some of the same materials Joyce describes in his pamphlet. In Montgomery County, Maryland, for example, art and music centers for children are growing in number--places where children go not only for formal lessons, but, more importantly, for individual experimentation of various kinds. The Central Atlantic Regional Educational Laboratory in Washington, D.C. is designing a much more elaborate learning center--really the nucleus for a whole school. The city of Philadelphia is finding this device useful in breaking up old teaching patterns.

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[11] Bruce R. Joyce, *The Teacher and His Staff: Man, Media, and Machines*, (Washington, D.C. NCTEPS and CSI, National Education, Association, 1967) p. 12.

We professionals have tended to be fuzzy in our conceptualizations of the types of support needed by schools, teachers, and children--often confusing one for the other. The Goodlad idea of differentiating by distance away from the learner is helpful, as is the recent paper by Joyce and others on the "Dimensions of a Curriculum Bank: Support Systems for Schools, Teachers, and Children." That article, generated at the request of the Sloan-Kettering Foundation, describes three kinds of curricular data banks:

> One would serve as a support system for making curricular decisions at the institutional level (that is, by schools and school systems). A second would function as a support system for the making of instructional decisions by teachers. The third bank would provide materials for use by children. The materials for the children should not be all of the same kind. The materials for children need to flow from different views of self-instruction as those conceptions fit different curricular and instructional purposes.[12]

Joyce's forthcoming book on Alternative Models of Elementary Education, (Boston: Blaisdell, forthcoming.) and his recent article called "The Principal and His Staff: The Multiple Systems Approach to Curriculum," (Elementary Principals Bulletin, September, 1968.) also help by conceptualizing varieties of curricular modes and teaching strategies. All these, in turn, add to the tool kit of the "teacher-scholars" destined to assume "colleague authority" in the new schools to be created by our institution-builder.

But such professional tools as exist must be readily available at all levels of inquiry, and the organization must have the capacity for inventing and producing more supports. They are to the teacher and the learner what the pharmaceutical companies, the medical suppliers, the dispensary, and the clinic are to the physician and his patients. They are also to the teacher and learner what the research physiologist, the nurse, the medical technician, the orderly and the nurse's aide are to the medical profession. Thus the support system idea includes ideas, people, material, and services. Indeed, the institution-builder we envisage might well grow into a "teaching-hospital-with-allied-dispensaries-and clinics" model.

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[12] Bruce R. Joyce, assisted by Elizabeth C. Wilson et al, "Dimensions of a Curriculum Bank: Support Systems for Schools, Teachers, and Children," June 7, 1968, p. 5. (mimeographed)

In any event, this institution-building model has three integral parts: (1) a small think-tank operation with a movable and moving "faculty"; (2) a teacher-support center stocked with the material, the technology, and the services needed by teachers to study themselves, the teaching-learning act, and the environment and school organization required to create schools as centers of inquiry; and (3) learning centers for children, also well stocked with organized instructional materials. These three parts may or may not be physically housed under the same roof. Such perhaps would be desirable. More important than physical propinquity is the establishment and maintenance of an open two-way communication system between the differentiated parts. The whole internal system, moreover, needs to be loosely, but powerfully tied to the parent organizations so that the whole operation functions in a snyergistic fashion. A synergistic structure means that the total organization has more effect than the sum of the parts would indicate--the effect of "killing two birds with one stone."

This inter-agency coalition would be staffed jointly by members of the collaborating university and the school or school system entering into contract with that university. In addition to a group of professors and teacher-scholars, the institution builder will need to have access to a series of consultants not necessarily allied with the university in question. Particularly, we are thinking of the disciplines from which education draws, such as philosophy, sociology, social psychology, psychology of learning and so on. It is most necessary to create a great deal of ferment and inquiry within this small institution since it is charged with the task not only of designing, producing, and maintaining schools which inquire, but also with the task of recreating that particular phenomenon in its parent institutions. The dimensions of the task it will set for itself are not known at this time. Therefore, the possibility of easy access to a series of scholar-consultants is paramount. For example, such a small institution might well want to establish periodic contact with the National Institute for the Study of Educational Change at Indiana University, of which Egon Guba is now Director, or with the Maxwell School at Syracuse University, a school dedicated to the study of institution building particularly in the underdeveloped areas of the world.

Aside from a small "think tank" group of individuals who are moving and fluid in nature--that is to say, not part of the permanent staff of the inter-agency center, there would need to be a relatively large rotating staff recruited from the parent institutions for varying periods of time. These joint task forces have the central task of inventing, designing, demonstrating, trying out, installing, and institutionalizing a series of models of new schools.

A corps of teaher-leaders who would be the shapers and movers of the new school will spend at least a year together inventing and designing the school they wish to put into effect. During this creative process the teachers would be backed up by the "think tank" people and by the entire teacher and learner support system. Indeed, all the services of the "institution-builder" would follow them as they move from the design and invention of the school into its actual institutionalization. At that point the services of the inter-agency complex would probably need to become more mobile than was necessary earlier.

Examples of projects allied to the central task are further investigations of the nature and use of support systems; careful documentation of the pathology of the failures which are bound to occur; and studies of "teacher belief" systems or "cognitive schema," as Robert Davis calls them.

In this connection, Davis remarks:

> The teacher in the classroom swims in an ocean of sensory information and must respond by a rapid fire sequence of hastily made decisions. The perception and interpretation of all of this data, as well as this stream of decision making, will be shaped in very pronounced ways by the teachers' "belief system" or cognitive schema."[1]

Teacher-scholars need time to become aware of their own belief systems in order that they may examine them, modify them, categorize them both in process and content. They thus acquire another tool to help other teachers gain access to the same insight and control over their teaching techniques.

There is no question but that these kinds of teacher tasks call for a quality of leadership in the profession which does not exist in great numbers. Thus we are not talking about all teachers. Rather, we need the teacher-scholar, the artist-teacher, who can assume the colleague authority Schaeffer describes, and who has the brains, guts, and power to focus the school over and over again upon its primary task of inquiry into the learning process, into teaching as a function of the learning process, and into the nature of the institution which promotes both.

Actually, it is as important that the center study the parent institutions as it is to create and maintain alternative models of schools which inquire. All of us, from time to time, have had experience with schools which approach this goal. The problem is not that some samples have never existed as a result of happy accidents or fortuitous concatenations of events and people. Rather, the profession needs to learn how to control the ingredients so that happy accidents have a higher probability of turning up--so that replication is a conscious possibility.

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[1] Robert B. Davis, Mathematics Teaching, p. 12.

One of the hypotheses to be field-tested by this institution-builder is that the present organizational set-up of school systems and teachers' colleges hinders rather than helps the creation of inquiring teachers and inquiring schools. Should this hypothesis prove to have any validity, paradigms for the redesigning of those institutions may also be a necessary product of this oddly constructed consortium.

In essence, the consortium will be promoting and hopefully resurrecting "the much-abused concept of action research."[1] Other terms for this kind of systematic and rational study are "program" and "operations" research. These remarks bring us back again to Robert Schaeffer who elaborates so beautifully the habits of mind to be acquired by the teacher-scholar and promoted by colleague authority:

> The commonality among all these approaches is their dependence upon rational thought and analysis. They emphasize the systematic study of what teaching is and scrupulously avoid the familiar hazards of defensiveness and tender-mindedness. Schools serving as centers of inquiry must foster all such disciplined efforts to achieve understanding... What is crucial is not that a particular mode be adopted but that the art of teaching (and we would add all the institutions which surround it) be subjected to vigorous continuing inquiry.[2]

But why, asks the old time progressive, does this institution builder not mention a vigorous continuing inquiry into the learning of children? Is it not important? Yes, we reply, it is the central concern of education, but has not been the central concern of the school. The problem addressed by this essay is how to realign the institution and the teaching act as a support rather than as a hinderance to learning. Previous studies of learning have had little effect upon the school as an institution. Perhaps if the school changed, existing learning studies could really be used.

Problems of Power and Authority

In any inter-institutional liaison, the extent to which a partner gives up power and authority to an outside agency is of prime importance. The failure of many such enterprises can be traced again and again to the difficulties which occur over the issue of power. In this connection, recognizing teacher militancy as a new power on the horizon, we recommend including leaders from the local teacher organization in the early stages of the planning for and the setting up of an "institution builder." Authorities should welcome such teacher interest and extend a warm invitation as a possible partner.

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[1] David Clark and Egon Guba, op. cit., p. 131.

[2] Robert Schaeffer, op. cit., pp. 72-73.

Whatever the outcome of these explorations and invitations, negotiations must proceed with great care and great clarity. Eventualities need to be explored openly in a series of discussions between the authorities of all institutions and agreed upon in writing. A good deal of attention needs to be paid to the set up of the governing body. There are various alternative arrangements. There are boards of trustees and/or governing boards which have the power to hire and fire directors and have control over the budget. There are directorates, assisted by advisory committees which sit regularly, and are powerful in that they are selected out of the power structure of the institutions they represent.

Other managerial questions include the kinds of funding which are possible, arrangements for personnel selection, and the amount of autonomy to be exercised by the institutional coalition. Again, there are various degrees of autonomy. These must be identified in whatever contractual arrangement is built by the parent groups. It is central that the agency have some funding of its own which it does not borrow from its parent institutions. In like manner, it needs the power to select its own "faculty" and consultant groups, and should have a decided voice in setting up the criteria for the selection of the individuals who will move through the centers toward the building of a school as a center for inquiry.

Let us be sure that the new institute does not get so bound up in entangling relationships and obligations to its parent organizations that it loses mobility and freedom. It must have these two qualities since, it will be remembered, the reason for its existence is that the homeostatic qualities of school systems and teacher education institutions have prevented the collection and organization of a sufficiently critical mass to break through the inquiry barrier. Both institutions tend to be bound by their own institutional habits and protocols. They are overly concerned with "keeping school," with business as usual, and with the maintenance of the institution. These are their real tasks. As a consequence there is little energy to pursue further inquiry into themselves, much less create a series of new schools. Further, as we have seen, such innovations as they do invent or adopt seem to flare up briefly, enjoy a short period of public acclaim, and then return to normal mediocrity. The "system" somehow manages to take its toll either by making it impossible for the creation to happen, or by draining off the energy required to institutionalize the creations which do occur.

Thus the new coalition must at all costs avoid falling into the trap of over-institutionalization itself. Perhaps the best analogy

Then End Products:
Recapitulations and Conclusions

In summary, this essay underlines the Schaefer leit-motif that the artist-teacher and the scholar-researcher must work hand and glove if the system itself is to change. It adds to this idea the hypothesis that no inquiring schools can be created which will sustain themselves and be replicable unless the system itself, that is the total system, is really changed from the bottom up. Thus the small agency with allied support system centers here described contacts with its parent institutions not only to invent, design, field test and establish alternative models of schools which are themselves centers of inquiry, but also to recommend those changes in the parent institutions which will reward and foster this kind of institution building.

The new agency will need to look into all levels of institutional decision making. For example, in big school systems it is important to examine the budget making process, the personnel selection process, the amount of decentralization, the role of middle management, the organizational communication system and so on. Similarly in teachers colleges and universities such matters as rank, the place of research, and the reward system of the institution should be areas for study. All systems must be willing to engage in serious self examination. Since that kind of study hits at the power structure of any institution, only relatively secure organizations (or organizations with their backs to the wall) will be tempted by this possibility or will attempt to take part in it. In other words, only mature institutions willingly fight about their primary tasks. The first order of business, then, is to find the institutions which are consciously ready to cooperate in such an alliance.

The second order of business consists in organizing, staffing and funding the interagency consortium. Essential at the beginning are the directorate, the "shadow faculty" to serve as the yeast for the new institution, a teacher support system as described by Joyce and Cuban, and a highly selected small group of artist teachers, destined to be the first faculty of the first model school.

Out of the first year of this organizational structure will grow the first school. Its precise dimensions can not be clearly foreseen at this point since the tast of the first year of the "institution builder" is to build these plans in detail. It seems likely, however, that the school will

. . . build around a learning center for children well stocked with a wide variety of multi-media instructional materials within easy access of teachers and children.

. . . use a variety of organizational patterns as means to different educational ends.

that we can think of is that of the scaffolding set up to assist in the process of building a new building. It is there while the building itself is getting under way, but is not functional after the building can stand by itself. Note, however, that heavy support needs to be built into the building if it is to stand alone.

This analogy suggests a small continuing staff as the directorate of such an institution. The main work would be done by task forces organized upon an ad hoc basis, recruited from both the schools and the university. It also suggests that the support system for teachers and children be not only available at the center during the invention and design phases of the creation of a new school, but that much of the same kind of support be built into the new school as it establishes and institutionalizes itself.

Obviously the new agency will need funds. It will need money to buy brains in the form of outside consultants, and to buy time for the artist-teachers and university professors who will be selected to move in and out of the institution. It will need money to set up a model support center for teachers and children and to conduct such evaluation as it deems important. It may well be that the institutions forming this coalition will wish to underwrite many of the costs listed above. Well and good. The more they contribute the more likely their active support of the consortium. But the consortium must not be dependent upon this kind of largesse. Without some independent funding, or at least monies earmarked for this agency, the new institution could lose its leverage in relation to the "establishments" and get swallowed up just as have other innovative arrangements.

At the same time that the inter-institutional agency needs freedom and independence, it also needs sanction from the power structure within each of the organizations it serves. Thus some mechanism must be devised so that the building agency has direct access to the power structures within the establishments. There may also be need to ally this institute with given segments of the larger establishments. For example, we note that the Ontario Institute grew out of a curriculum arm built by the Ontario Teachers Federation, and that a research office here or a curriculum office there may already be serving a university or a school system as an unofficial planning and development office. These are the kinds of ties which need to be built into contractual arrangements. They will vary from school to school and from institution to institution. Suffice it to say that as contractual arrangements are developed, it is important to locate the places within existing institutions which bear the closest resemblance to centers of inquiry already, and to use that strength in a well defined systematic relationship.

. . . have considerable control over its own budget and personnel.

. . . organize a faculty dominated internal governmental system which concentrates efforts on instruction.

. . . spend considerable time and energy in articulating its goals, and in studying its successes and failures in achieving these goals.

. . . require a variety of differentiated responsibilities and specialists in its staffing arrangements.

. . . adapt its curricular modes and teaching methods to local needs and tastes.

. . . attend to the system of interlocking components which must work together, i.e., curriculum, diagnostic and evaluative procedures and instruments, organizational patterns, teaching methods, and staff education.

As the first model school becomes operational, the "institution-builder" begins to take on the dimensions of a teaching hospital. Indeed, this combination of "shadow faculty," teacher support center, and first school model should help identify and nourish the "clinical professors" needed by the teaching hospital. They might be active school practitioners. They might be educational engineers from the teachers' colleges and universities. In any event it is expected that they would assume the kind of leadership for the new institute and for the model schools that the medical profession now exerts in hospitals, buying the kind of managerial and administrative assistance that is needed but holding the reins of policy and planning for the school in professional hands whose first concerns are instruction, not administration.

If all goes well, the institution builder or teaching hospital will soon have the capacity (1) to create other models of inquiring schools, (2) to serve as training grounds for other scholar-teachers, (3) to investigate the nature of the institutions which help and which hinder the creation of a "new tough-minded progressivism."

Obviously the quality and catalytic capacity of the leaders of this consortium is of primary importance to its successful operation. They need both the intellect to conceptualize and create and the ability to build the environment where inquiry is rewarded and supported. The directorate should probably combine the talents of several people, who are at home in both the schools and university world and who together can be equally forceful in thought and action.

A major component in the creation and operation of the institution-builder is provision for the basic emotional needs of the staff as well as the push toward the primary tasks of inquiry and institution building. The kinds of changes here envisioned are bound to upset the habitual order of the day as well as run head on into

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political power struggles. We have already noted the psychological phenomenon of assasination of the leader and the need for providing a periodic haven for those who in fact do lead well.

The idea of mobile groups moving through the teaching hospital or teacher support center makes for some possibility to take care of these needs. Another is to make a major business of the institutions a series of well-defined projects which have a beginning and end and which do not require that individuals abandon entirely their need for touching home base from time to time. The point is that, whatever the particular strategy, the organization must recognize the need for recharging emotional batteries and provide regular escape hatches for even the most mature staff members.

But the center need not always be a place for Puritan hard work, nor for agonizing wrenches from old and familiar habits and patterns. The norm created can also be exciting, fun, stimulating, and intellectually and emotionally rewarding. Such a mood can be created by careful selection of continuing leaders and by changing and enjoying an inquiring and irreverent mix of real professionals. In summary, we see the moving staff which works through the "teaching hospital" or "teacher support center" as staying long enough to invent and design new models or pieces of models of schools which will inquire in the Schaefer sense. They may periodically return to redesign, to retool, or to escape from the heat of the kitchen. They will come singly or in teams. Teams will surely be the order of the day as new school models are designed and become operational.

This support system, moreover, will continue to be operative as the groups leave the institute to try out, to demonstrate, and to institutionalize their inventions. These supports may well be a small version of the teaching hospital -- a clinic or dispensary -- designed as a support system for the local children and teachers and/or a mobile support team which would move from the teaching center out to the places where invention and design were being tried out. Thus while the teaching hospital per se might move on to erect more scaffolding around more new schools, sustained support for the old would be built into the system, support which would continue to engender inquiry and which could, in turn, make a real profession out of teaching. As Martin Mayer remarks and Robert Schaefer notes in his prologue:

> Given almost unimaginable good luck, American education could develop into a predominantly scholarly enterprise, in which the masters of a study would feel an obligation to communicate, and the teachers of children would feel an obligation to discipline their common sense and seek out the uncongenial idea.... Teachers could participate in the invention and propagation of teaching ideas, in the elimination of what is inconsequential, stupid, misleading, or unnecessarily difficult and, in the adaptation of pedagogic models for differing groups of students.[1]

Here is an attempt to create a situation where unimaginable good luck will be the order of the day

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[1] Martin Mayer, "Changes in American Education in the Next Decade: Some Predictions," in Matthew B. Miles, Innovation in Education (New York: Bureau of Publications, Teachers' College, Columbia University, 1964), pp. 626-627.

Appendix: Chapter Eight

Developing the Inquiry School

by George Usdansky, Montgomery County, Md., Public Schools

INTRODUCTION

This paper considers some of the problems of instituting, in accordance with the model, those phases of the program which take place in school systems, as opposed to those which take place exclusively in the university. This is not to deemphasize the problems in the first five years of the proposed program, but the treatment does assume that a specialized and intensive effort will have to be made in the cooperating school systems. The implicit underlying assumption which justifies this amount of effort is that the undergraduate and internship portions of the program cannot by themselves produce the self-sustaining and self-renewing kind of change in teaching contemplated in the proposal.

Beyond this restriction of topic to the continuing phase of the program, there is a further narrowing in that, of the general problems of implementation, there is emphasis upon the early stages of implementation and the planning for them--"launching" is the word used in this paper to refer to these. "The problems of birth" is the way they are referred to in the proposal. One thinks also of "getting underway," "taking off," etc.--all remarkably poor figures of speech for expressing the movement from planning on paper to beginning the implementation. The terms are not suggestive with regard to the activities to be described; they provide no analogies upon which to base initial model building and theorizing. Although work is being done on theoretical models for initiating large scale social change, this paper does not attempt any such model building with regard to school systems and teaching. However, it does attempt to follow an outline suggestive of some of the concepts and points of view likely to be required in any such model, and to make some suggestions about the problems of launching under each. That the comments do not fully fit within the outline--running back and forth among headings and with some comments apparently fitting equally well under more than one heading--is testimony of the need for a model which could systematically embrace the many pertinent points of view.

The Individual

There is a tendency in the literature considering institutional change to deemphasize conceptualization in terms of the individual personality. With regard to change in school systems, this is sometimes defended as a means of avoiding any impression of an attempt to "re-make" the personalities of those involved. There are good reasons why the attempt at change as experienced by the participants should be task-oriented. But this does not preclude conceptual analysis in terms of the individual on the part of those designing the programs for change. That individual psychology has a direct place in any full conceptualization of institutional changes seems clear. But it may be worth noting here that this level of analysis has particular importance at those points in a program which involve selection of participants. Students in the pre-service phase of the proposed program are obviously selected on an individual basis. To the fullest extent possible, selection of teachers and administrators from cooperating school systems should also be on an individual basis in order to maximize the program's chances of success. The difficulties of making significant planned changes in educational institutions dictate this. The past years of effort to improve teaching have hardly been marked by such success that one can overlook any chances of improving the odds.

Motivation for Change

No individual characteristic seems to be more frequently mentioned in assessing the chance for social improvement than motivation for change. But the problems of assessing it are many. Perhaps the easiest and surest path to the selection of participants on the basis of motivation would consist of presenting the change situation--means and goals--as graphically as possible and on this basis soliciting interest in participation.

I am reminded, in saying this, of a remark once proudly made by an undergraduate dean to the effect that "no student continues at our college for the same reasons which made him chose to come here." Being then a third year student at the college referred to, I felt the truth of the remark. I had not really known what kind of school it was until I had been there some time. I certainly had not anticipated which aspects of the school would become important to me. Looking back, I could not even remember clearly just what picture originally held of the college had motivated me to choose it.

Our inability to predict the personal meaning which will become attached to even our most important and carefully planned experiences--to know in advance what we are getting into--has since impressed me in other contexts. Motivation for change indeed! If it could be pure motivation for change, without content and without specific images and hopes, it might represent a less self-deluding basis upon which to build. But the notion of motivation for "pure" change without content involves a psychological contradiction.

Rather than arguing from this for some "existential leap" into experience, I would like, quite to the contrary, to go the rationalist route and argue for as complete and graphic a portrayal as possible of the planned change effort in which membership is being solicited. "The Teacher and His Staff: Man, Media, and Machines," provides an excellent example of this kind of presentation with regard to the "classroom of tomorrow." The same kind of graphic presentation (quite possibly accompanied by slides, movies, etc.) of who would be doing what, where, why, and under what circumstances, should be made for each component at each phase (undergraduate, intern, teaching) of the proposed program. That it would require a great deal of work is clear. So would any formal method of selection. At no greater cost and effort, this approach would place the selection emphasis upon making the act of volunteering meaningful.

At least in some aspects, these write-ups would represent idealized pictures. But this could be made clear in the write-ups themselves and, far from imposing a premature rigidity upon planning, would be part of the strength of the vehicle for motivation. One can, after all, make a good case for the proposition that motivation for long range goals is largely based upon idealized pictures. The write-ups, appealing to this basis, would serve to attract those who share a common ideal. As the participants worked together toward that ideal, their experiences would impose modifications upon it. But the fact that they began together and aimed together would be the most likely means of producing a common view of the realities in which they found themselves, even as these necessitated altering their original view. In other words, as the principle of functional autonomy came into play, the motovations to which it gave rise would more likely be consonant because they had grown from shared interactions built on a common base.

Have we done enough, in past attempts at producing change, in enlisting support on the basis of a common, well-articulated image? Can we move from the generalized statements of the proposal to the detailed word pictures of the story and thus establish motivation on as firm and explicit a basis as possible? To the argument that this kind of detailed description can only come or should only come after the experience of the project, I would like to make three objections: (1) It almost never does. Thus the experience itself, if not "off the record," is never really a part of the record and something to be worked with. (2) Even for the conceptualizers of the project--those most at home with generalizations and abstractions--there are dangers in not rooting these generalizations in the most detailed specifications possible, even though these would have to be somewhat tentative and illustrative in nature. (3) Without this specification, the conceptualizer is either asking the educational practitioners to work toward a vision which they may not be able to make their own, or risking disparate visions on the part of the practitioners. In either case, the participants are not being "motivated" in ways likely to advance the project.

Other Individual Characteristics*

One could thus, via the narrative write-ups, increase the validity of motivation as a basis for self-selection. Other characteristics, to be meaningfully incorporated into a self-selection procedure, would require additional mechanisms. I have in mind such characteristics as previous professional achievement, certain kinds of adaptability shown in the teaching role, and the feeling of competence in terms of locus of control and locus of responsibility. And I am assuming the superiority, especially from the standpoint of good interpersonal relations within a school system, of meaningful self-selection over other mechanisms for selection.

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* I am using "characteristic" loosely, as a general category embracing various terms for conceptualizing about the individual, e.g., motivation, trait, attitude, ability, etc.

As opposed to trying to test for such characteristics as those mentioned by employing external frames of reference, it would be worth experimenting with self-selection by incorporating the self-selection process into the "Controlling the Self" component of the proposed program, as the introduction as well as a continuing basis for that component. I am thinking particularly of the way in which this component was handled in the teacher education program described in "A Rationale for Teacher Education," by Bruce Joyce and Richard Hodges. It involved a non-faculty member--a psychologist--meeting with the student-teachers to help them in learning about themselves as teachers (and students?). This same approach, evidently with more emphasis upon the frameworks themselves which are used in the study of the self, is described in the proposal as part of the pre-service phase. I am suggesting that it should be extended into the in-service phase and include the teachers from the cooperating school systems. Moreover, it might begin with the instructor-psychologist (who probably should be a non-school system member in this phase) working with the potential teacher participants on their perceptions of the project, their reasons for wishing to participate in it, and the relationships between these two factors with regard to their teaching performance in the program, their likely relations with the interns and new teachers from the program, and the likely outcomes of the program. Following up on this kind of study, and through it, these teachers would be expected to make for themselves the final decision about whether to participate in the program. Putting this together with the descriptive proposal write-ups mentioned earlier, these teachers would have had a good chance to learn what the project was in conjunction with examining their perceptions and motivations with regard to it. Building upon this, the "Controlling the Self" component could then become a regular part of the "continuing phase" of the program, pursued in form and objectives just as described in the proposal, only with the content enriched through the interaction of cooperating teachers and new program teachers placed in the same "Controlling the Self" study groups.

Structure -- The Group or Organizational Unit

The size of the organizational unit which is made the target of the change effort is obviously critical with regard to launching that effort. The size of the unit will be the major determinant of the homogeneity of the unit, its accessibility to the change-sponsoring organization, and the ease with which mechanisms for autonomy can be built into its functioning. Obviously, the smaller the unit, the greater the likelihood of achieving, by the time of launching, homogeneity of viewpoint with regard to the change goals, and of maintaining this cohesiveness through the life of the program. To maintain it, the unit must be readily accessible to the change agents, to fill the need on both sides for first hand, personal knowledge, speed of communication, and adaptability. True change causes discomfort, and this easily distinguishes it from the ready absorption by institutions of new terminology, new administrative organization, and even new personnel and materials, without so much as a change of pace. But it is this discomfort, which so easily leads to destructive controversy and dilution of purpose, which calls for ready accessibility to the target organizational unit.

Both the need for homogeneity and for accessibility dictate the use of the individual school as the target unit and the whole school faculty as the group to be involved. Tackling larger segments of the school system would lead to dilution of efforts. Working with central office units alone runs into today's particularly acute problems with regard to teacher autonomy and violates the need for direct accessibility to teachers as well as the need to work with relatively autonomous units. Central office units are inextricably bound together in their functioning, and to tackle the entire central office operation is in effect to try to work with an entire school system.*

The individual school is the key unit in the school system. It can be small enough for the teachers to have personal contact with one another and with the change agents, yet is large enough to encompass considerable heterogeneity of functions. Most important, it is a unit which can function in remarkably independent fashion if its members are so minded and receive some aid in doing so. By "working with" the individual school unit, I have in mind rather intensive involvement with the change agents on the part of a majority of the faculty of a small school. If a secondary rather than an elementary school is considered, it might not be possible to involve a majority of the faculty intensively, but certainly the principal and assistant principals, the department chairman, the counselors, and a liberal sprinkling of other faculty members should be involved. By "intensive" involvement I am thinking of at least two summers of full time study plus at least one afternoon per week during the school year. Of course, if the goals of the program are realized, study during the school year would in effect be full time since the program work would be directly implicit in the full day's activities each day. The substance of the program would be the continuing phase components described in the proposal. Their link with the five per-service components is of course very close. Perhaps it could be arranged that cooperating teachers, new program teachers, and interns could pursue their summer studies together in the same university classes (whether or not these are actually located at the university), just as during the school year they would be working and studying together in the job situation. Much of the course work would be novel enough to be attractive to teachers at various levels of experience, and it would be possible to arrange course credits, even though for common classes, in accordance with the degree requirements of the individual.

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* I obviously have in mind here large school systems, but I think the same reasoning would apply to systems with as few as 20,000 students. Systems with, say, only two or three secondary schools plus feeder elementary schools might present a different picture with regard to implementing change.

Allotting this amount of time to study, during summers and during the school year, to teachers engaged in special projects is perfectly feasible. It is currently being done in a number of school systems. A newly opening school presents a splendid opportunity for enrollment in the propsed program. Recently, in the Montgomery County Public School System, a principal and assistant principal plus about eight of their staff, all designated to open an experimental school, spent the year prior to their school's opening in preparatory study at an out-of-state university. This would be one mechanism for launching the propsed new plan for teacher education in a cooperaing school. However, I would like to see the opportunity presented by the opening of a new school used in a different manner. The principal and his key staff members would be designated in advance of opening for the new school, having been introduced to and pretty well committed themselves to the propsed plan of teacher education. They would remain located within their school system, recruiting teachers for the new plan on the basis of the descriptive proposal write-ups mentioned earlier plus the prospect of a committment to the summer and school year study program. During the year prior to opening, they would be allotted afternoon study time to pursue what we might call the preliminary phase of the "Controlling the Self" component in the manner outlined earlier, concentrating upon the proposal and themselves as potential participants in it. University personnel would have to be active in this phase, as they would in the earlier recruitment for it, working with the principal and his immediate staff on presentation and selection procedures. As summer approached, emphasis in this study phase would shift most specifically to the task of self-selection, with the participants themselves deciding how they should pursue it. The selection and commitments made, that summer would mark the beginning of the study program proper.

In advocating this approach, I do not believe that I have overstated the degree of independence available to an individual school, at least when it is in a large school system. None of the training components requires more initially than a vigorous school staff could pursue, with the aid indicated, without requiring concomitant changes in fellow schools or central office departments. Such a school or schools would of course require a quota of cooperation and good will from the central administrative staff, but nothing out of the ordinary. In the large school systems today there is an emphasis upon the need to decentralize. Although the genuine determination and the mechanisms for doing so may be lacking, an effort of the kind indicated with a few schools in a large system would not be undercut by centralized resistance. The program could, in fact, take advantage of today's heightened spirit of militancy among teachers, along with their striving for independence and the tendency to believe that no one in the school system besides the teachers themselves can help matters. The university represents an outside agency, with still some political capital among the schools. It would be necessary to approach a school board and school administration on the one hand and the teachers' representatives on the other in such fashion as to make it politically feasible. While this calls for care, it does not seem a big obstacle when there is a great surge for change of some kind, federal money to be offered, and the opportunity on the part of the sponsoring university to select from among many those schools and school systems where the spirit appears to be most congenial.

This approach to launching the program in school systems, while it is in many ways ambitious, is a conservative one in that it seeks to direct a maximum amount of energy on the smallest independently operating unit. It advocates building the new mechanisms around and within existing structures. For this reason there is no discussion on the current "non-school" or "community school" ideas. These would require that the component controls of teaching already be practiced at a high level. Otherwise the "non-school" program would disintegrate into a hodgepodge of good intentions diveorced from established means.

Structure (Barriers and Linkage Agents)

Even though ready to make use of teacher militancy, I am hardly ready to go along with what seems to be a closely related tendency to repudiate the idea that help for the teacher can come from the centralized administrative departments of the school system. For the teachers of the cooperating school systems, summer study plus some study time during the school week would not alone be sufficient to promote the kinds of changes in teaching sought. A large amount of professional help is required to guide the study and the program generally. While the university might attempt to rpovide this help exclusively through its won staff, the small staff available would severely limit the number of schools which could ne invited to participate. More important, there would then be no provision for the development of the implementation skills among personnel who are in a position to move between schools and thus act to broaden the base of change within the school system. There is therefore the need to draw upon a sizeable cadre of professional help from within each of the cooperating school systems. The cadre would work with the cooperating schools from the beginning, and develop increasing independence in promoting this kind of change. A cadre should be attached full time to the cooperating school or schools of each school system, participating fully in the summer as well as the in-school courses of study, and moving from the student role to the role of support and resource person as they are able to do so. In fulfilling this support role, they would be in touch with university faculty during the school year, and this might involve regular, intensive seminars, about their functions and about the difficulties of the role itself.

Each of the educational program's five basic components is too broad and they are too closely intertwined to permit neat allocation of responisbility for support of them in accordance with typical organizational roles in the school system. But they do suggest the kinds of support personnel required. In support of the second component, one would probably want to include among the cadre members subject matter specialists and curriculum development personnel; in support of the third, staff development personnel, resource teachers, teacher-specialists, departmental chairmen, etc.; and in support of the fourth and fifth components, psychologists, pupil personnel workers, social workers. Perhaps the greatest amount of help would be needed by those cadre members who undertake to support the fourth and fifth components. Upon them would fall the major share of the task of ensuring continuing self-scrutiny on the part of the cooperating school. Given the initial vision and hopes, what are the obstacles which develop to impede progress and how can the school move as a whole to overcome them? These cadre members would be undertaking an especially difficult role, one which calls for sensitivity in the perception of obstacles as they appear and special skilss in aiding staff to overcome them.

The early phase* of the program with regard to central office support personnel would begin by attaching those personnel directly to the cooperating schools. This should begin with the initial, tentaive selection of staff for the new school and with the preliminary, self-selection phase of the "Controlling the self" component outlined. It would continue throughout the proposed program until this supporting cadre had become proficient in terms of the requirements of their supporting roles as defined by the new program of teacher education. This would complete the early phases, and it was said just above that the cadre would then be in a position to take a central role in disseminating the program among the schools of the cooperating system. But this omits a step, if the movement is ever to spread widely. We are now considering a much later phase of the total program, but it has implications for the training, mechanisms, and point of view of the earlier phases. Having achieved proficiency in their roles in the schools, the cadre would have to confront their special position in a new light, not only as special vis-a-vis the faculty in the schools, but also as special in relation to the central office administration. The cadre members must, in short, be ready to move into central office positions, but in such a manner and with such skills that they can take part in a revamping of the central administration that would make possible a general movement in the school system toward the proposed control of teaching. The cadre is unlikely to be the central mover in this. Other mechanisms directly impinging upon the central staff would be required, including, to begin with, a conceptual model and a detailed plan of action for the central office and system-wide phase.

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* As I write, I am aware of a difficulty with terms describing the program itself. I am referring here to "early phases" from the point of view of the cooperating school system. Note how literally opposite are the two views of the path to teaching, making a term like "continuing phase," perfectly descriptive in the propsal, confusing if used in this paper. The one view looks out from the university and see the new teachers marching off to their new classrooms. The other view is from the school system, watching them entering. As this paper grows in length if not in clarity, I realize that it is because the propsal, while acknowledging the importance of the view from the school system, gives that view almost no attention, and I grow increasingly nrevous as I try to speak to that view. What a lot of work it will require to do justice to its complexities!

But in this movement, the cadre could be more than exemplars and possessors of know-how for input into the schools. They should, by this later phase, have been trained in a total view of the school system based on a full conceptual model of that system, and a view of themselves and the mechanisms in which they are trained as linkages between the parts of that total complex--between the university and the school system, between conceptualizers and practitioners,* between principal and staff, between those who embrace the new programs and those who are defending against them, between experienced teachers and new ones, and--perhaps most important--between themselves as linkage agents and other groups. As the cadre members become skilled in fulfilling their role as linkage agents with regard to the individual cooperating schools, they can begin examining barriers to the spread of the new programs throughout the school system, and their possible functions as linkage agents in overcoming those barriers.

As the scope of the program broadens, the nature of the problems and the mechanisms needed to cope with them change not only in size but in kind as well. The teacher in the individual cooperating school, for example, is envisioned here as surrounded by colleagues not only engaged in the same pursuit, but governed by the same overall goals and viewpoint. Thus supported, the teachers may become comfortable analyzing their own teaching, and even having their teaching analyzed by colleagues. To achieve this same result in many schools, not so homogeneous with regard to the pursuit, would call for new mechanisms for presentation, motivation, support, etc. Perhaps centrally located teaching clinics might be used. But then, upon the teacher's return to his base school, means would have to be available to support him in his "difference" from other teachers in his school.

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* The proposal for a conceptual model of teacher education appears at times to envision teachers as both conceptualizers and practitioners, as scholars and researchers as well as good teachers. I do not see this as a possible or even helpful goal, even if it is taken to mean the development of a small but influential percentage of such teachers among the total. My view, in essence, is that it is necessary and possible to educate a substantial percentage of teachers to a kind of middle ground, to be practitioners still, but practitioners whose application of techniques and materials is more versatile, simply because they command more of them and better ones, and because they apply them with greater depth of understanding which stems from a liberalizing educations built upon them, as indeed the proposal describes.

The development of new roles, strategies, and mechanisms to face the problems of operating on a wider scale might be viewed as the "continuing phase" of the educational program for the cadre of supporting personnel and for the university staff involved. They would be asked to build upon the problems and solutions found in, say, the first two years of working to effect change in individual schools, preparing themselves for the problems to be encountered in attempting system-wide impact -- the conceptual model to be used, the barriers likely to be encountered, the mechanisms to overcome them, etc.

In summary, I am advocating the launching of this proposal in the schools with the narrowest feasible scope, planning and providing resources as intensively as possible on that basis. There is need from the very beginning, of course, to try to conceptualize the whole picture, in organizational scope and over time. But the effort should be to move from this total picture of a more narrow focus which makes it possible to avoid tackling all of the problems at once. Achieving this depends upon a plan for the sequence and development from that more narrow base to the total picture. The first step inevitably foreshadows and to some extent determines the second, and so forth, and there must be time to concentrate on taking that first step well in order to ensure that a second may follow from it.

Process and Conceptual Model

In an article entitled, "An Exploratory Study of Knowledge Utilization,"* Ronald G. Havelock and Kenneth D. Benne attempt to develop a model for the systematic utilization of knowledge, general enough to be applicable to the field of public school education. After taking a structural view of knowledge utilization, they consider utilization as a process:

> But the systems approach becomes more cumbersome when we want to get a more detailed picture of what is going on at each of the exchange points or linkages in the flow structure. A utilization chain involves countless communicative acts, exchanges of information, contacts between persons and between groups. To study each linkage as a discrete phenomenon occurring at one and only one point in the system would be excessively redundant and more confusing than enlightening. All the separate linkages have many features in common, and

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* In Concepts for Social Change, Goodwin Watson (Ed.), Washington, D.C.: National Training Laboratories, NEA, 1967.

> they may all be considered as separate instances of one overall process. (p. 60)

The authors then consider "process" under three headings, "Motivational Aspects," "Interpersonal and Group Membership Issues," and "Technical Issues." Since the last, "Technical Issues" deals with the mechanics of the flow of information, I assume that the descriptive proposal write-ups I spoke of earlier would be linked to this portion of the conceptual model as that step in the preparation of a message which the authors describe as "recording the information so that it is understandable and acceptable to the reader" (p. 67). In recommending such write-ups, I was stressing motivational aspects, not particularly technical ones. Moreover, it occures to me that I could as easily have argued for a descriptive version of the proposal from yet the standpoint of the third heading ("Interpersonal and Group Membership Issues"), citing the nature of the barrier between proposal writers and teachers in school systems. Everything which comes up, under "process" at any rate, does seem to apply with equal pertinence at many points in the system. The technical issues of packaging information do need to be considered at every transitional or linkage point. A summary view of a system with regard to this aspect of process can be obtained by comparing the transitions in the packaging of certain units of information as they pass from the developer to the user end of the system.

It is this interrelated character of systems conceptualizations, brought out so clearly in the process viewpoint, which creates the need for a conceptual model through which to keep track of them. The conceptual model in the paper just cited seems to have merit. Its authors note that the seminars and papers on which it is based are due to be reported in a more detailed and extensive publication. Rather than recommend its use over another models, which I am not in a position to do for lack of the requisite knowledge of this area, I would like to move from the general assertion of the need for a conceptual model to some considerations about the model itself from the standpoint of launching the proposal.

The implications of the different kinds of models, considered from the implementation standpoint, illude me because I am not sure what the different implications may be in the use of a "utilization of knowledge" model as opposed to a "communication" model as opposed to an "institutional change" model. It may be that what goes into these models is, at this stage in their development, so wide open that the choice of kind of model is not critical. But one important matter might be determined by consideration, not of what the model is to do, but for whom it is to do it. Is the model solely for the guidance of the project developers? Also for administrators and supervisors in the cooperating school systems? Also for teachers in the cooperating schools? If the model is to provide guidance for all of these groups, we are again faced with the problem of appropriate packaging of information, the information in this connection being the model itself.

Could it too be transformed into a descriptive write-up so that it could be of general use, serving both to motivate individuals toward participation and as a continuing cohesive force? This would involve a reworking of the general conceptual model so as to make it specific to the particular situations envisioned in the proposal, then treating those specifics narratively - structural and process linkages, barriers, change agents, and all - in such a way as to convey the model.

Should the attempt be to include in a single model (1) the instruction of the university faculty members themselves in the novel teaching elements of the program; (2) that faculty's work with teachers in the pre-service phase of the program and with both teachers and local supporting cadre in the in-service phase; (3) the cadre's work with teachers at the local level; and (4) the teachers' work with their students - several groups and levels of teacher-learners in two different institutional settings? Although it would be complicated, there would be advantages in incorporating at least levels 2, 3, and 4 within a single model. The proposal describes, as a major means of implementing the components, an interaction between levels in which teaching and learning at one level becomes the substances of study at another level. The teacher studies his teaching and the classroom and school in which he does it. Also, implicity in the proposal, the teacher, in the classroom, seminar, and school setting, studies himself as a learner and these settings in which he and his colleagues are learners together. In either case, there is an interlocking of levels, a consideration from different but reciprocal aspects, and it would be advantageous if these possibilities were reflected in the model.

Chapter Nine

The Sequence of the Contact Laboratory

Much direct contact with children is indispensable in the preparation of the teacher-innovator. He must understand children and schools and develop authentic capacity to work with them. In addition, he must know he is an effective teacher, so he must contact children enough, and become skilled enough, that he is sure in self-knowledge of competence.

The contact laboratory is the combination of settings in which teacher candidates study in direct contact with children or schools. The reader may legitimately ask why we do not use the term "student teaching." The full answer probably requires a reading of this entire document and a knowledge of the whole program rationale. A short but accurate answer is that the program does not include a separate component which in any way resembles student teaching of the usual sort. Contact laboratory experiences are integral parts of the four basic components and are controlled by them.

In fact, this section would not even be included in the report were it not that the provision of contact laboratory experiences requires elaborate arrangements and enormous effort. This is especially true in the Teacher-Innovator model program, because the components require a number of extensive contact experiences which are controlled by the flow of the component. Most complex, of course, is the need for a special school which is operated as a center of scholarly inquiry into teaching and learning.

The contact laboratory is best described as six phases, each of which serves the four basic components in particular ways, often serving two or more components simultaneously. Briefly, these are:

Phase	Type	Purpose
Phase One	Experiencing the School.	A four to eight week apprenticeship to a public school.
Phase Two	Small-Group and Tutorial Teaching (Preferably in Candidate-operated Program).	Ten to Twenty Weeks of experimenting with teaching strategies.
Phase Three	Unit Experimentation in Inquiry School.	Group experiments in teaching units taking four to eight weeks.
Phase Four	Experience in Curriculum Modes in Inquiry School	Observation-Participation Experience in a variety of Ways of Teaching.

Phase Five	Carrying on an Educational Program.	Inquiry groups develop and carry on a Candidate-Operated School Program.
Phase Six	Internship	Paid Teaching, preferably in teams derived from Inquiry Groups.

The contact laboratory begins in the first weeks of the program and continues, ideally, into the first year of paid teaching. Only the initial phase includes apprentice teaching of the type most familiar in traditional student teaching programs. The remainder of the experience is in experimental teaching in which the candidates are mastering a variety of strategies and carrying out teaching units which they develop with research designs.

Phase One
Experiencing the School

This phase consists of four to eight weeks of experience as an unpaid teacher aide in a public school classroom. All members of each inquiry group are placed as aides in the same school, and they work in pairs or threes attached to individual classrooms or teaching teams, depending on the staff utilization pattern of the school.

This phase should begin as soon as possible after the teacher candidate enters the program. It serves two purposes. First, it brings the teacher candidates into contact with children, schools, and teachers. Previously, candidates have known the school, but from the perspective of students, rather than teachers. Now they look at children, and at the school with the eyes of teachers-in-training. They begin to know the people they will try to teach and they take the measure of the job. They develop a ground of common experience, also, which can be drawn on throughout the program.

The second purpose is to involve the teacher candidates in the analysis of the school as an institution and the classroom as a social system. These analyses form a critical part of the Innovator Component. The experience of the school is essential if the teachers are to understand the bureaucratic processes of the school and the alienation that is implicit in learning bureaucratic roles. (See the description of the component for details.) Similarly, the analysis of the social system of the school and classroom is part of the early activity of the Institution-Building Component and is drawn on in the Teaching Strategies Component to help candidates learn to study what Louis Smith calls the micro-ethnology of the classroom. "Experiencing the school" should last at least four weeks, but, if the program is spread over enough time, more time, up to six or eight weeks of half-time experience, is desirable.

Phase Two
Tutorial and Small-Group Teaching

This second phase lasts ten to twenty weeks. It consists of experience with one to five children for short periods of time, several times a week. The experience can be developed in any one of several ways. Teacher Candidates can work in a candidate-operated educational program. This might be during after-school hours or on weekends. They could offer "remedial" or "enrichment" programs. Another possibility is assignment as tutors or small-group teachers in a normal public school or the Inquiry School. A third possibility is participation in an after-hours/weekend program offered through the Inquiry School. Fourth, in an urban program, is participation in a community school, such as a "store front" school.

The second phase of the contact laboratory serves three of the basic components. Most prominent is the Teaching Strategies component, for it provides the setting in which cnadidates practice and study "teaching strategies," apply methods learned in "flexibility training" and "structure training," and develop and test out teaching strategies drawn from the disciplines.

Also, however, the tutorial phase serves the Innovator Component by providing both inquiry and feedback groups with the opportunity for experimentation and the analysis of problems in implementing new educational forms. It also provides the setting for the "creativity training" sub-component.

In addition, the tutorial phase serves the Teacher-Scholar component in three ways. It enables students to practice techniques for studying teaching and learning, to replicate and originate research in the teaching of the disciplines.

In order to serve these multiple demands adequately, the tutorial program must meet these criteria:

1. It must provide much opportunity for independent teaching. It may serve a school program, but the teacher-candidates need the opportunity to make and carry out educational decisions.

2. It must be conducted where teacher-candidates can observe each other teach.

3. It must permit television and audio recording of teaching episodes.

Phase Three
Unit Experimentation

In this phase each inquiry group tailors a learning unit (four to six weeks) to a group of children and carries out the unit as an educational experiment. All members participate. There are at least three ways of providing this experience. It can be done in the context of a candidate-run educational program. Or, it can be arranged in a normal public school. Or, it can be provided in the Inquiry School.

It requires simply that each inquiry group be given, for a period of one to two months, responsibility for teaching from about ten to thirty children for from four to eight weeks for from one to two hours a day. (The upper limits are most desirable in each case.)

Phase Three serves all four Basic Components. It provides opportunity for an authentic Institution-Building activity. Second, it involves the development and testing of Teaching Strategies. Third, it furthers the Innovator component by giving the candidates a reasonable chance to carry out an innovation of their own making. Last, it requires study of the disciplines, teaching and learning, and the institution, and so serves the Teacher-Scholar component.

Phase Four
Experience in Curriculum Modes: The Inquiry School

In the fourth phase the candidates are attached to the Inquiry School where they study several types of education. They may serve as aides if the experience has sufficient duration. It serves all four basic components by providing an authentic example of institution-building and teaching where scholarship is practiced and innovation is a byword. This phase would not be difficult to provide were it not for the necessity of developing the school.

Phase Five
Operating an Educational Program

Next, the teacher candidates need to practice what they have learned and solidify their bond to each other as innovators. If they have been already operating a remedial or enrichment program this phase is not necessary. Otherwise, the candidates should plan and carry out a summer school or an after-school or weekend program for children.

At Teachers College, during the summer of 1968, this experience took the form of a summer school for neighborhood children, judged disadvantaged by the local public schools, whose personnel identified the children and helped recruit them. The teacher candidates planned, executed, and studied the entire education program. (See the appendix report for information.)

Phase Six
Internship

The first year of teaching should be regarded as an internship. Where possible, Teacher Candidates should be placed so that three occupy two normal teaching positions, and they should be placed so that feedback groups can continue their experimental activity.

Ideally, the candidates are placed as teams. Either interdisciplinary or specialist teams are possible, depending on local preferences and opportunities. The most promising candidates might be placed in the Inquiry School, attached to teams engaging in curriculum research.

The Total Pattern

The six phases represent types of activities which might be combined in several ways. A small masters-level program might combine all contact laboratory experience within an Inquiry School whose components enable all the necessary activities to be carried out.

The six phases here represent an ideal situation under normal conditions where the Inquiry School, normal public schools, and the need for aides and interns, are all present.

The Total Patterns

The following table relates the four basic components to the sequence of contact laboratory experiences.

Contact Laboratory and Basic Components

Phase	Genre	Activities	Components Served
One	Experiencing the School	Teacher aide: Analysis of School and Classroom.	Institution-Building, Innovating, Teacher-Scholar
Two	Tutorial-Small Group Teaching	Experimenting with Teaching Strategies.	Institution-Building, Teaching Strategies, Teacher-Scholar, Innovator.
Three	Unit Study	Experimenting with Unit Teaching	Teaching Strategies, Institution-Building, Teacher-Scholar, Innovator.
Four	Experience in Inquiry School Teams.	Studying School as an Inquiry Center.	Innovator, Institution-Building.
Five	Operating Own School Program	Experimenting and Studying Teaching and Learning.	All Components.
Six	Internship	(as in Five)	All Components.

PHASES OF COMPONENTS
by
PHASES OF CONTACT LABORATORY

THE INTERACTIVE TEACHING COMPONENT

(1)

Contact Laboratory Phase	Sub-Component Instructional Decision-Making	 Models of Teaching	 Flexibility & Training	 Structuring the Classroom
I Experiencing the School	"The Teaching Game"		Study "coping" behavior	Study Microethnography of Classroom
II Tutorial-Small Group Teaching	Tasks in the Simulated School	Study & Master Maneuvers	Communication Tasks	Master Structuring Maneuvers
	Study Specialty Related Strategies	Study and Master Strategies	Practice in Tutorial	Experiment with Teaching Strategies
	Practice in Tutorial Situations	Create and Test Strategies	Situations	Diagnose and Apply
III Unit Experiment	Apply to Unit	Apply to Unit	Apply to Unit	Apply to Unit

THE INTERACTIVE TEACHING COMPONENT

(2)

IV Inquiry School	Analyze Strategies of Inquiry Teams	Analyze Strategies of Inquiry Teams	Analyze Teachers	Analyze Structuring in Inquiry Teams
V Operating Remedial-Enrichment School	Apply Strategies	Apply and Test Strategies	Apply and Test Self (Continue Training as appropriate)	Apply and Test Self (Continue Training as appropriate)
VI Internship	Apply Strategies	Create and Test Strategies	Apply and Test Self (Continue Training as appropriate)	Apply and Test Self (Continue Training as appropriate)

PHASES OF COMPONETNS
by
PHASES OF CONTACT LABORATORY
Institution-Building, Innovator, Scholar

Contact Laboratory Phase	Component			
	Institution Building	Innovator	Scholar	
			Study of Teaching	Study of Learner
I	Analyze Social, Technical, and Curricular Systems of School	Experience and Analyze Bureaucratic Structure		
II	Tasks in Simulated School	Analyze Bureaucratic as Non-Bureaucratic Behavior	Study Four Conceptual Systems	Study Developmental Theories
	Study Curricular Specialty-Alternative Curricular Systems	Develop Experiments in Reference Group	Study Own Teaching	Apply to Students
III	Develop and Test Unit	Develop Experiments in Reference Group	Study Own Teaching	Apply to Students

Institution-Building, Innovator, Scholar

IV	Study Strategies of Inquiry School	Reference Group Establishes Ties to Inquiry School Faculty	Study in Inquiry School
V	Plan and Carry out Remedial-Enrichment School	Reference Group Plans and Carries out Remedial-Enrichment School	Carry Out Experiments in R-E School
VI	Apply Strategies in Teams	Reference Group Members placed in Teams	With team members, continue study

Part III

The Four Basic Components

Chapters Ten through Thirteen
describe the major
components and sub-components
of the program

Chapter Ten

The Interactive Teaching Component

Chapter Ten - A

Instructional Decision Making

(From Simulation to Reality)

It has always been difficult to link training for educational decision-making with the "real world" of the teacher and the learner. The teacher has very often resisted efforts to teach him to "decide about what and how to teach", preferring instead to study techniques of classroom teaching.

In this component we attempt to find through the use of simulation and later by involving the candidate in experimental teaching, to make instructional decision-making relevant and vital to the teacher candidate.

The Processes

The basic process is that of deciding how to tailor the educational environment to the needs of the students. This process involves blending knowledge about student(s), content, and community with a knowledge of teaching strategies to determine the objectives and procedures the teacher will use during an attempt to teach. Instructional decisions can plan activities to be carried out over a relatively long period of time (up to six or eight weeks of activity) or a relatively short time (an hour or so). Generally, however, the longer-term decisions will have to be revised many times as activities proceed.

To make instructional decisions a teacher needs to control strategies for studying, students, social milieu of the students, and subject disciplines, and he must possess a repertoire of teaching strategies derived from theoretical positions on learning, philosophical stances, and ways of organizing and analyzing the disciplines. Further, he needs to make decisions in terms of hypotheses that given a strategy will have a certain effect on a particular learner, or group of learners. Thus, as he tests that hypothesis, he can revise it or not, depending on the evidence. (See Chapter Three of the Structure of Teaching for a complete description of the process.[1])

Our uncertainty about educational ends and means makes the hypothetical character of instructional decisions extremely important.

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[1] Bruce Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967).

The team of teachers, making, carrying out, and revising decisions, becomes, at its best, a group of educational scholars, learning about teaching - learning while engaged in teaching children. Thus, what is important is how the teacher rationalizes his decisions, rather than whether he makes decisions that fit someone's conceptions of "right" educational procedures or the conventional wisdom of the day.

It should be stressed that educational decisions, can result in non-directive environments as well as directive ones. "To instruct," as it is used here, means only "to help to learn," and some ways of helping are reticent while others are aggressive. Also, instruction implies shaping the environment of the learner, and a given strategy may affect any of several aspects of the environment in various combinations. For example, a nursery school teacher, creating a certain social climate because of the effect she believes it will have on a three-year-old, is instructing, just as is a high school mathematics teacher who chooses a "programmed" strategy (See Chapter Ten - B) to teach a specific concept from geometry.

The Behavioral Objectives

Objective One

Knowledge of and ability to employ teaching strategies derived from theoretical stances on learning, philosophical positions, and analysis of the content and modes of inquiry of the academic disciplines.

This objective is the general objective of the Models of Teaching sub-component described in Chapter Ten - A. Detailed illustrations are provided in that chapter. The objective is specified here also because it is essential to achievement in the component providing, as it does, the

Objective Two

Knowledge of the interaction between teaching strategies and learner characteristics. Ability to select and defend teaching strategies in terms of the learner.

Objective Three

Knowledge of interaction between teaching strategies and characteristics of the community which comprises the educational milieu. Ability to select and defend teaching strategies in terms of the character of the community.

Objective Four

Knowledge of and ability to employ the major strategies which are used within the area of specialty. (This objective duplicates several of the major strategies of the institution - building component, which includes mastery of the major strategies and research of the curriculum area or other specialty.)

Objective Five

Ability to make, carry out, and defend the selection of teaching strategies in terms of the factors indentified in One to Four above: characteristics of the learner and community, theoretical or philosophical positions on learning, and methods and contents in the disciplines.

To operationalize this objective within any specialty, faculty need to work out systems for deriving and rationalizing teaching strategies.

See:

Bruce R. Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967) for explicit description of systems for deciding on teaching objectives and strategies.

Bruce R. Joyce. Alternative Models for Elementary Education (Boston: Blaisdell, 1968) for a description of various types of educational ends and means, together with their rationalization.

The material included in the social studies illustration in Chapter Eleven illustrates the types of approaches which need to be identified within each curriculum specialty. (For example, there are a half dozen major approaches to the teaching of science in the elementary school, and each has its own way of looking at objectives and selecting teaching strategies. These approaches and their implications need to be made specific. The same is true in the areas of reading, language teaching, mathematics, the arts, and early childhood education.)

Rationale of the Sub - Component

There are two levels to the strategy of the component. One level operates to immerse the teacher candidates in a situation where making, defending, and revising educational decisions is a necessary and normal activity. The second level operates to teach substantive processes for making decisions in an "action-context" composed of real and simulated problem-situations, so that the teacher develops authentic competence for decision-making. The first level of our strategy serves to motivate the candidates. The second level gives him the opportunity to develop such competence in decision-making procedures that he will employ them confidently and optimistically.

The approach employs two simulated settings for decision-making and several contact-laboratory settings.

To present the candidates with the need for decision-making but at a level of complexity they can handle, the component begins with the "Teaching Game," an attractive group game in which candidates are given teaching tasks, are assigned "learners" who have various characteristics (they are described in terms of intellect, rigidity-flexibility, interpersonal-relations, attitude toward teachers), and construct teaching strategies to accomplish the tasks. Using a manual which is provided, the group analyzes the strategies and progress scores are given for successful matches between strategies and learners. The teacher then revises his strategy and the process is repeated.

The game can be played so that the number of learners can be varied, as can the kinds of learner characteristics, the type of teaching tasks, and the opportunity for revision of strategies.

Successful players must operate on the concepts that strategy must be related to learner characteristics and that learner characteristics interact with each other as well as with the environment.

The game provides for confrontation of the need for a repertoire of instructional decision-making strategies but in a safe environment where there is no cost to teacher or learner.

From this point the teacher-candidates move to a simulated school which consists of:

Fourteen data banks containing large quantities of information about fourteen children.

Sets of information-in-depth about three communities: Spanish Harlem, a New England town, and an English town.

Sets of decision-making tasks which require curriculum and instructional decision-making.

The candidates administer to themselves sequences of tasks. They make and carry out curricular and instructional decisions for various combinations of learner and community characteristics. For example, seven of the simulated children are from Spanish Harlem. After making decisions about teaching them in Harlem, the candidates are asked to remake the decisions, assuming the children have moved to the New England town. For another example, a candidate receives a little information about one child, makes a decision in one curriculum area, receives more information, makes another decision, and so on, until he learns how to adjust teaching strategies to increasing information about the learner.

While carrying out tasks in the simulated school, the candidates study teaching strategies (Chapter Ten - B), curricular decision-making (Chapter Eleven), and ways of analyzing subject matter, the learner, and the process of teaching and learning.

Gradually the component merges with the Institution-Building component, as each inquiry group, assigned to children in tutorial relationship and working in the enrichment-remedial school, begins to make and carry out instructional decisions with reference to real children. Continously thereafter, each teacher-candidate makes and rationalizes instructional decisions, sometimes to his feedback team, sometimes to his inquiry group.

The component culminates when the inquiry group is assigned to a group of children for when they must teach a unit within their specialty. The inquiry group develops and rationalizes the strategy develops a research design, and then carves out the unit, testing the strategy-hypothesis.

The Means of the Component

The means flow directly from the rationale, complicated only by the fact that the component depends on competencies developed in other components, necessitating close coordination with them.

Phase One

As in the case of all components, during phase one the inquiry group becomes acquainted with the means and objectives and makes specific plans (with the faculty counselor) for administering the component to itself. Phase one can begin with the playing of "The Teaching Game" as described above and in the Appendix to the Component.

As inquiry group and faculty members discuss the game, the necessity for having strategies for making and carrying out instructional decisions will become evident.

Phase Two - A

In phase two, the inquiry groups tackle problems in the simulated school. The data banks that make up the school are available through Bruce R. Joyce, Department of Curriculum and Teaching, Teachers College, Columbia University. They include data on fourteen children, the three communities, and sets of decision-making tasks.

The next few pages consist of illustrative decision-making exercises prepared by Dr. Greta Morine, formerly professor at Hofstra University and now of San Jose, California. Dr. Morine created much of the data banks on the children, and deserves much credit for this approach to decision-making.

The tasks are designed to cause the candidates to need to reach out and learn how to create strategies based on children, community, and subject matter. Parallel to the tasks are activities (Phase Two - B) to help students develop those competences.

Decision-Making Tasks

(developed by Greta Morine)

(Please note that tasks need not necessarily be presented to students in the order in which they are presented here.)

A. Introduction to Data Bank

You are a fifth grade teacher in the opening weeks of school. Included in your class are the fourteen children in this Data Bank. The following types of information about these children are available to you:

Family background: general, social, political
Health Record
Attendance Record
Nurses Comments
Report Card Records
Teachers' Comments
Parent-Teacher Conference Reports
Intelligence Test Results
Achievement Test Results
Cognitive Test Results
Creativity Test Results
Psychological Test Results
Sociogram
Reports on General Classroom Behaviour

Samples of Classwork: writing, arithmetic, art
Special Interests and Hobbies
Child's Perception of Community
Child's Perception of Self
Child's Reaction to Various Learning Situations

In addition, there are several books and research papers dealing with three communities, Spanish Harlem, Newburyport, Massachusetts, and Baxbury, England, an industrial town.

1. Your immediate task is to organize the fourteen children into reading groups. Your class is expected to use the reading series. You are allowed to use only one type of information in forming reading groups.
   a. Indicate what type of information you have chosen.
   b. Indicate how many reading groups you would form, and what children would be placed in each group.
   c. Indicate what reader you would assign to each group.

2. In evaluating your decision about reading groups, you are permitted to use two additional types of information. On the basis of this additional information you may or may not wish to modify your decision.
   a. Indicate what types of additional information you have selected.
   b. Indicate how many reading groups you would form, and what children would be placed in each group.
   c. Indicate what reader you would assign to each group.
   d. Indicate what other types of information might be relevant

to this decision, in order of their importance.

(A group meeting to discuss decisions and problems should follow completion of this task.)

3. Your principal has indicated that you may try running an individualized reading program on a small scale. You are to select three or four students that you think would benefit from such a program. You may use any information in the Data Bank.

a. Indicate what students you would place in such a program. You may use any information in the Data Bank.

b. Indicate what items of information you requested in making this decision. Which items were most useful? Which items were not useful at all?

(Suggested references on individualized reading programs, if necessary: Jeannette Ventch. Individualizing Reading Instruction (New York: Putnam, 1960).)

B. Planning Lessons

1. Arithmetic

a. A group of children in your fifth grade class are having some difficulty with arithmetic. Carefully study the arithmetic papers of Carmen V., Bob W., Jim G., and John M. which are dated Dec. 15, 1967.

Plan the next arithmetic lesson to be taught to this group. You may assume that any class materials you select to work with are available, but indicate specifically what materials you will use (give examples or samples) and tell how you will use them.

Keep a record of any items of information you retreive from the Data Bank in the course of planning this lesson.

b. Plan an activity or activities for other members of the class related to arithmetic, that they may be doing while you work with this small group.

c. Revise the arithmetic lesson planned for Carmen, Bob, Jim and John to construct a lesson using the operant conditioning model. (See Chapter Ten - B) If your original lesson followed the operant conditioning model, revise it by using the advance organizer model.

d. Plan an arithmetic lesson for Carmen V., Bob W., and John M. as if they were back in the first grade. First read the results of the cognitive test of one-to-one correspondence, which was administered to them in kindergarten.

2. Social Studies

a. A fifth grade class composed of the fourteen children in the Data Bank is studying Colonial New York in social studies. The following topics are some which have been selected for committees to investigate:

1) Family Roles
2) Laws and Sanctions
3) Training and Education
4) Leisure Time Activities

Using the sociogram and not more than two other items of information, divide the class into committees to investigate and report upon these topics. The size of the committees may vary, but all topics must be assigned to a committee.

b. A national election is in progress, and you have overheard children in your fifth grade class discussing their favorite candidates. How would you utilize this interest in planning a social studies lesson?

Indicate the following:

1) the community in which your class is located;
2) the type of lesson model you will use;
3) the items of information from the Data Bank which would be most relevant;
4) an outline of your lesson plan;

What kinds of changes would you make in your lesson if you were teaching a second grade class?

(This task should be followed by group discussions, stressing the ways in which various restrictions affected the lesson plans.)

3. Language Arts

a. Plan a lesson on some aspect of expository writing for this class of fourteen children. You may group the class if you wish.

Use the samples of children's expository writing (book reports, science reports on weather) to help plan your lesson. You may use any other data you think is relevant.

As you work, keep a record of the various kinds of decisions, both large and small, that you make in planning this lesson.

(This task could be followed by group discussion comparing number of decisions, and information used in making decisions.)

4. Science and Health

a. The New York State Curriculum Guide requires that all teachers include some discussion of the evils of alcohol and narcotics in the intermediate grades. Plan three different lessons dealing with this topic. Each one should use a different lesson mode. All should be for the fifth grade level. The lessons should be planned to meet the following conditions:

Lesson one -- the community is Spanish Harlem; the students are Carmen V., Jose D., Bob W., and Ruth B.
Lesson two -- the community is Yankee City; the students are John M., Jim G., Joe K., and Esther T., and Jane A.
Lesson three -- the community is Baxbury; the students are Robin E., June M., Ira M., Neil L.

b. You are a fifth grade teacher in a school which insists that teachers follow the textbooks and teachers' manuals to the letter.

Attached is a copy of one of the lessons in your science textbook. (See Appendix E.) Read it carefully. Then study the protocols of the cognitive tests on floating and sinking objects.

How would you proceed?

(This task should be followed by group discussion, centered on how a teacher can operate to effect curriculum change.)

c. Planning Units of Work

1. Plan a week of individual work for any one of the following children: Robin E., Jeff M., June M., Neil L., or Esther T. Select a subject matter area in which the child shows particular strength. You may select any grade level you wish. The work can involve use of self-instructional materials, or a tutorial setting, or both.

Make a record of the data which is most relevant to your decisions. Be sure to look at the data on reactions to various lesson models.

2. Plan a week of individual work for any one of the following children: Carmen V., Jose D., Bob W., Jim G., John M., or Ira M. Select a subject matter area in which the child shows particular weakness. You may select any grade level you wish. The work can involve use of self-instructional materials, or a tutorial setting, or both.

Make a record of the data which is most relevant to your decisions. Be sure to look at the data on reactions to various lesson models.

3. You are a student teacher in a grade level and community of your own choosing. The classroom teacher and your student teaching supervisor have agreed that you may have two hours a day for six weeks to teach anything you wish. There are no subject matter limitations. You need follow no curriculum guidelines. You want to do something that will make a lasting impression on the class of fourteen children in the Data Bank.

What do you want to know about the class before you begin planning the unit?

Outline a unit of work and include lesson plans for the first week.

5. Science Unit

a. Your principal has asked you to plan a unit of study in science, using an inquiry training model. You are to set up a classroom in which to teach the unit. Two fifth and two sixth grade classes will come to your classroom every day for an hour each. Assume that all four classes are heterogeneous groups similar to the fourteen children in the Data Bank.

What topic will you deal with in the unit?

What equipment and materials will you need?

Draw a diagram of the classroom, indicating where you will place equipment and furniture

Plan the first day's lesson.

b. As part of a curriculum experiment, your principal asks you to teach the same science unit to another group of fifth and sixth grade classes at a later date. This time you are to use the concept formation (attainment) model.

Will you make any changes in equipment and materials?

Draw a diagram of the classroom, indicating how you would arrange equipment and furniture for this group.

Plan the first day's lesson.

c. The following year you move to another school, which attempts to follow the "Summerhill" model of curriculum organization. You wish to teach the same science unit.

What changes, if any, will you make in your plans related to the following aspects of the unit: lesson model; equipment and materials; room arrangement; lesson plan.

(This series of tasks should be followed by group discussion focussed on how and why the teacher's decisions are affected by curriculum constraints.)

D. Evaluating Interactive Decisions

1.

a. Attached is a partial transcript (or tape) of a lesson being taught to a group of children from the Data Bank. At the point where the transcript (tape) stops the teacher is expected to make some sort of response to the situation.

You have two minutes to read the transcript (or listen to the the tape), decide upon your response, and indicate that response in writing.

b. Now that you have made a decision, you have time to evaluate it.

What do you predict will be the reaction of the class or individual to your response? What are your reasons for this prediction?

What information about the class or child did you consider before making your decision to respond?

What additional information would be helpful to you? You may obtain any additional information that is available in the Data Bank.

On the basis of your predictions and the additional data you have considered, do you feel you made the best possible response to the situation? How might you change your response? What would be the expected changes in the class or individual's reaction?

(This format could be used with several different transcripts, presenting different types of interactive situations. These tasks should be followed by group discussion comparing the effects of alternative responses to the same situation.)

E. Planning Conferences

1. Parent-Teacher Conferences

a. You are a fourth grade teacher in a school which reports student progress by the use of parent-teacher conferences rather than report cards. Plan what you will say to the parents of three of the children in the Data Bank. Select one child from each of the following three groups:

A	B	C
Jane A.	Carmen V., Jim G.	Robin E., Neil L
Ruth B.	Jose D., John M.,	Jeff M., Esther T.,
Joe K.	Bob W., Ira M.	June M.

b. You may need to reconsider your initial plans in relation to the following questions:

1) What data did you refer to in planning your conferences? What data did you ignore?
2) Considering the I.Q. score, and the standardized achievement test score for third grade and fourth grade, has the child made the type of progress you would expect in the past year?
3) Have you considered the child's progress in all of the following areas: skills; ability and knowledge in subject matter areas; thinking abilities; independent work habits; social skills and abilities; emotional development; physical skills and abilities; general classroom behaviour?
4) What kinds of information do you wish to get from the parents which might be helpful to you in recommending grade placement or preparing comments for next year's teacher?
5) Have you read reports of earlier parent conferences so that you know the kinds of questions you may get from the parents?

(This task could be followed by a group meeting where students conduct simulated conferences, with other students or supervisors playing the parent's role.)

2. Student-Teacher Conference: Cognitive

Study the samples of creative writing for the fourteen children in the Data Bank. Plan an individual conference to discuss the work in creative writing with one child from each of the following three groups:

A	B	C
Carmen V.	Jose D.	John M.
Bob W.	Robin E.	Ruth B.
Jim G.	Ira M.	Joe K.
Jeff M.	Neil L.	
June M.	Esther T.	
Jane A.		

The conference should touch upon skills that are well developed as well as skills that need additional work. You should make an individual assignment to help each child progress further.

In planning the conferences, look at the following items from the Data Bank: creative writing samples; creativity tasks' achievement test records; I.Q. records; cognitive tests of categorizing ability; art work; family background; child's perception of the community. For each child, list those items of information which are most-helpful and those items which are least helpful.

3. Student-Teacher Conference: Affective

a. Plan three individual conferences to discuss children's roles as group members. Select one child from each of the following three groups:

A	B	C
Ruth	Jane	Jeff
June	Carmen	Jose
Robin	Jim	John
Esther	Bob	
Neil	Ira	
Joe		

In planning the conference, consider the following items of information: transcripts of group discussions with and without teacher; summary sheets on group roles; papers on child's self-perception; sociogram; psychological reports.

1) Indicate what questions you will ask the child, or what kinds of additional information you want from him.
2) Indicate what information you plan to give the child.
3) Indicate what suggestions you might make to the child.

b. As an alternative to individual conferences, plan a lesson for the whole class, using either the Rogerian model or the "group at work" model, which would help to get at the same kinds of social problems.

F. Making Reports

1. Reports to Teachers

a. Read the teachers' comments on children in the Data Bank from kindergarten through fourth grade. As a new teacher, which comments would you rate as most helpful? Which are least helpful? What characteristics these two types of comments?

Can you suggest two or three principles to guide you as a teacher in making helpful comments for the next teacher? (This task should be followed by group discussion to develop some guidelines for teacher comments.)

b. You are a third grade teacher at the end of the school year. Write a short paragraph reporting on the progress of any five children in the Data Bank. This report will go into the child's cumulative folder and will be used by the teacher next year. Make it as helpful and informative as possible.
   1) What data did you use in writing these reports?
   2) What data did you want that was not available to you?
   3) What problems did you have in following the group's guidelines for teacher's comments?

2. Reports to Parents

You are a fifth grade teacher in the middle of the year. Letters must be written to the parents reporting on the children's progress to date. Select any one of the fourteen children in the Data Bank and write a letter that would be a suitable report for his parents.

As you work, keep a record of the various decisions that you make in planning and writing the letter.

(This task could be followed by group discussion related to types of decisions, and information taken into account.)

3. Reports to Committees

a. You are a teacher in "Yankee City." Your school has decided to try team teaching in the social studies program. You have been appointed as a member of a team of third grade teachers to plan a unit of work on local community organizations. Each member of the team has been asked to come to an initial meeting ready with suggestions about the unit.

What information do you need to know before the meeting?

What three concrete suggestions will you plan to make to the team?

(This task should be followed by a group meeting in which some students play the roles of team members and act out an organizational meeting, while others observe and take notes. The whole group would then critique the team meeting.)

b. Suppose you are a teacher in Spanish Harlem rather than Yankee City. How would your suggestions to the team differ? (This might be followed by another "team meeting," to see whether students are able to utilize the earlier critique.)

G. Gathering Data

You are a fifth grade teacher at the beginning of the year. You have been assigned a class of twenty-five children. You have been given only the following information about the children: name, address, birth date, parents' names. All other information which is contained in school records is on file in various school offices.

You must set up the classroom, choose teaching materials, and plan the first week of school.

1. What information do you feel you must have immediately -- that is, before the children come to class the first day? Where would you go to get this information?
2. What information will you plan to collect during the first week of school? How or where would you expect to get this information?
3. What additional kinds of information would you hope to have by the end of the second month of school? How or where would you expect to get this information?

(This task should be followed by group discussion focussed on relative value of various types of data, and alternative means of collecting data.)

Phase Two - B

Parallel with the work in the simulated school, teacher candidates should study strategies for making and carrying out instructional decisions. (See: The Structure of Teaching and Alternative Models for Elementary Education for guides to this area); (Chapter Eleven) they should study teaching strategies and their psychological and philosophical rationales (See Chapter Ten-B); and should explore curricular and instructional strategies which are specific to subject fields (Chapter Ten-B and Eleven).

Although this study is provided in the correlated components, the thread of work in the simulated school should be accompanied (as indicated in the task-descriptions) with a set of discussions which bring together the learnings from several sources to the decision-making problems. Alternative bases for making decisions should be made clear.

Phase Three

This phase occurs during the tutorial-small-group phase of the contact laboratory. Feedback teams practice teaching real children, making instructional decisions, rationalizing them to one another, and testing their teaching strategies. At this point, the component has become one with the Models-of-Teaching subcomponent and the Instruction-Building component. The reader, hence, should turn to Chapter Ten-B and Eleven and pick up the thread of activity from this point.

Appendix: Chapter Ten-B

Models of Teaching: Mastering Nine Teaching Strategies

To the person learning to teach, this sub-component will probably be the most vivid, and to the faculty it should serve as a unifying element. On its success depends the real utility of the other sub-components in the area of interactive teaching. It serves to link the intellectual aspects of teaching (the making of decisions, the shaping of subject matter, and the selection technology) with the clinical aspects of teaching (the touching of minds and emotions with the learner, the creation of the social system of the classroom, and the manifestations of flexibility and sensitivity).

For six years we have engaged in developmental effort to try and develop a basis for a component which would bridge theory and practice so that the work of the teacher would be comprehensible in terms of ideas about teaching and learning. If that can be achieved, the school can be built as a center of inquiry into teaching and learning as well as a place in which school is kept.

To attempt to relate educational theories very closely to the operational practices that occur when a teacher and a learner are engaged together is to transform educational theory quite radically. Except in the most abstract minds, theories of education have seemed to float free of the world of the school and the teacher and the child. In this component a serious attempt is made to make educational theories explicitly operational in terms of things that teachers and pupils do, and to provide the teacher with the capacity to generate rational positions about teaching and learning which he can operationalize himself.

The Processes

This component focuses directly on what we shall call strategies for teaching. At its simplest a teaching strategy is simply a thoughtful teaching operation in which the teacher does what he does because he believes it will have a positive effect on the learner. At its most sophisticated a teaching strategy is an elaborated theoretical position that has come into reality as a teacher and learner have interacted. The process of teaching with strategy involves the development of hypothetical positions about the results of various forms of teacher-pupil interaction and the translation of these into teacher behaviors. For example, A. A. Neill, the headmaster of the famous Summerhill School, has a carefully thought out theoretical position on education. Neill has translated this position into action. He has built a school, trained a faculty, and organized students in such a way that his theoretical position has been brought into reality. As they work with students at Summerhill, the faculty are aware of what they are doing and guide their behavior by well thought-out guidelines about the relationships between teacher behavior and learner behavior. Neill is an example of a teacher who has developed the ultimate skill in teaching strategy because he is able both to generate theoretical positions and to operationalise them with children.[1]

Another person who has done this is B. S. Skinner. Skinner has developed and tested theories of operant conditioning and has translated these into the devices for learning which have become known as "programed instruction." Skinner has a theoretical position that he also has turned into teaching devices and rules for teacher behavior that actually operate effectively with children.[2]

Not everyone accepts Neill's position on education nor does everyone accept Skinner's position. Both, however have developed and used theoretically-anchored teaching strategies.

We take the position that our Teacher-Innovator should be able to comprehend the models of these and many other theorists and should be able to carry out a wide range of strategies - to operationalize a wide variety of theoretical positions about education.

For the teacher this involves the process of mastering a wide repertoire of teaching behaviors that can be used for many ends.

> While we are not certain what combination of events makes a good lesson or what combination of qualities makes a good teacher the potentially better teacher is one who is able to plan and control his professional behavior - to teach many kinds of lessons, to reach many diverse learners, to create different social climates, and to adopt a wide range of teaching strategies to changing conditions. The reason the teacher must possess a range of teaching strategies is simply because different styles of teaching behavior are useful for different educational purposes, and every teacher seeks educational ends that demand more than one way of teaching. Sometimes students are unruly, and the teacher must shift his strategies to develop a cooperative social system. Sometimes students are bold thinkers and challenge the teacher to lead them in the exploration of content that interest them. Other students are conforming thinkers, reluctant to venture original ideas. They need to be induced to stop seeking "right" answers and develop an intellectual autonomy. There are learners lacking important basic skills who need direction and protection until they can acquire them. Each student is a unique combination of needs and abilities.

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[1] A. S. Neill. Summerhill (New York: Hart, 1960).

[2] B. F. Skinner. Technology of Teaching (New York: Appleton-Century-Crofts, 1968).

> In each class or inquiry group is a unique combination of individuals. The teacher learns to recognize differences between students and groups of students and adjust his strategy and style of teaching as he turns from one to the other.

Psychologist David E. Hunt has likened teaching styles to the working methods of counselors and therapists. He has pointed out that therapists are not always reflective and non-directive or always directive and structured in their counseling. When a client or a situation needs strong direction qualified therapists can counsel in a very pointed, structured and decisive manner. When a client largely needs to reflect on his problems, the therapist can help the client talk out the situation, guiding him toward self understanding and a resolution of his problems. The therapist alters his professional behavior for different objectives and different clinets. So it is with the teacher. A teacher who cannot vary his method or style is seriously limited. He needs to be able to select from a repertoire tactics that will lead to different objectives and induce different students to learn.[1]

It is important then that the teacher master a basic repertoire of moves or manuevers which he can use to carry out a wide variety of teaching strategies. He also needs to learn a representative sample from the spectrum of theoretical positions about education and how to translate these into teaching strategies.

In this component provision is made for the teacher to master four basic teaching maneuvers that are the beginning of a reportory which will enable the teacher to manifest quite a wide variety of teaching strategies. Provision is also made for the teacher to master nine basic strategies which represent widely known theoretical models of education. Further, provision is made for the teacher to create and carry out strategies of his own making and to test these out gathering information about their effectiveness.

The Maneuvers of Teaching

When he is interacting with his students, the teacher controls his behavior to induce student reactions that will lead to learning. The teacher maneuvers, in a sense, to elicit from the student those behaviors that will lead to the achievement of the educational objectives the teacher has selected. If the teacher wishes the student to become a better thinker - for example, to be able to frame hypotheses and test them - then he asks questions, poses problems, or makes provocative statements in the hope that the student will be caught up in a problem and induced to develop and test hypotheses (and subsequently led to reflect upon and to improve his ability to do so).

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[1] Bruce R. Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967), pp. 94-95.

The target of every teacher behavior, then, is a responsive student behavior. The wider the range of teaching maneuvers, the better the teacher's chance of bringing about more kinds of desirable learning from larger numbers of students. The goal of teacher education is to help the novice teacher widen his repertoire of maneuvers.

Teaching maneuvers very nearly run the entire gamut of human behavior. For example, teachers use gestures and facial expressions. They ask questions; they speak in soft voices or in stentorian tones; they carefully set the stage, feeding the students information and ideas and then asking questions that cast both into doubt.

Teachers also build maneuvers into teaching materials. They construct books that lead students step by step through difficult material. They develop exercises that induce new ways of thinking. They build materials that require the practice of skills and the use of information. They create elaborate games that simulate economic or political activity. The teacher uses himself in conjunction with teaching materials, combining his own words and personality with books, motion pictures, and other devices to create learning situations and elicit student responses he could not achieve without collaboration with technology.

How many teaching maneuvers are there? There are as many as imaginative teachers can create through the use of their own knowledge and the skills and products of technicians and publishers. It is a pity that the work of so many teachers and of so many teaching materials enbodies such a narrow range of all the strategies possible. There is a tendency for teachers to find comfortable styles - a few maneuvers that seem to work for them - and then to settle into those styles, smoothing them out but not expanding their repertoires. To prevent this, the teacher needs to become a student of teaching styles and maneuvers. He can analyze his own teaching and identify the kinds of maneuvers he employs habitually. Then he can deliberately seek to add more "strings to his bow." One of the uses of the "Manual for Analyzing the Oral Communications of Teachers" in Appendix A is to help teachers analyze their own verbal communication and expand their repertoires of comfortable maneuvers. Several universities are now carrying out extensive projects designed to help teachers analyze and expand their styles.[1] In addition, here are several publications that can help teachers identify the range of possible maneuvers.[2]

In the following pages we will discuss a number of classroom maneuvers that illustrate the broad spectrum of behaviors a teacher uses to effect student behavior. We have included maneuvers designed to bring about four kinds of student behavior, which by no means exhaust all of the possibilities.

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[1] For example, see the Project on Student Teaching at Temple University (Edmund Amidon, director) and the Micro-Teaching Project at Stanford University (Dwight Allen and Robert Bush, directors).

[2] See Norris M. Sanders, Classroom Questions: What Kinds? (New York: Harper & Row, 1966); James A. Smith, Setting Conditions for Creative Teaching in the Elementary School (Boston: Allyn & Bacon, 1966).

1. Maneuvers to Induce Productive Thinking. Productive thinking includes the ability to generate alternative hypotheses and problem solutions, to synthesize information and build generalizations and theories to explain it, and to create original stories and ideas. Every teacher needs a variety of tactics to stimulate productive thinking.

2. Maneuvers to Induce Mastery of Content and Achievement of Skills. At times it is desirable to bring students to a certain level of performance--to teach them a skill, a body of inforamtion, or generalizations that explain information. Maneuvers for this include demonstrations, recitation, programed techniques, and tactics that structure material to maximize memory or skill development.

3. Maneuvers to Induce Self-Direction. Self-direction is another common goal of instruction. Appropriate maneuvers include counseling, role playing, discussion, and other tactics which induce students to reflect on themselves and take responsibility for setting their own goals and procedures for learning.

4. Maneuvers to Structure Activity. Whenever an activity is difficult for students, or whenever students are uninterested or unruly, it may be desirable for the teacher to induce an organizational structure that enables learning to proceed. Some maneuvers accomplish this by initiating tight organizational procedures for the group. Others are aimed at increasing the students' interpersonal skills.

If a teacher can induce these four kinds of student behavior, he will be able to carry out a great many teaching strategies. One can think of maneuvers as a basic repertoire of tactics or as the elements of a basic teaching style. With these maneuvers he can begin to operate competently in the classroom. As he gains experience, he can develop more maneuvers for inducing these and other student behaviors, thereby increasing his capacity to reach larger numbers of students more effectively. The discussion that follows illustrates a few of the many behaviors a teacher can use. Experience will show that there are other kinds of desirable student behavior to be considered as well.

The maneuvers we will describe or illustrate will not be appropriate for every teacher. Each teacher must create the kinds of tactics he is comfortable with and can implement in accord with his personality. However, the teacher need not feel that he is confined to a limited number of maneuvers. We have found that while teaching styles are indeed related to personality factors, many teacher can expand their repertoires dramatically if they will learn to analyze their teaching and make deliberate attempts to increase their range.[1]

As we shall see, the range of effects on student behavior is increased by the fact that the same maneuver can serve more than one purpose. A drill exercise, for example, designed to help students master information, may also organize the individual student's activity and initiate a working environment in the classroom. In the same vein a maneuver designed to increase a student's self-direction may also involve him in a project that leads to productive thinking.

The analysis of teaching maneuvers is complicated by the fact that nearly all teacher behaviors have an emotional as well as an intellectual impact on the student. When a teacher calls on a student, he may scare him if the student is unsure of his ability, or perhaps he may comfort and support the student by giving him attention and recognition. The affective or emotional dimensions of teaching are extremely important, and we need to consider the rewarding and punishing effects that maneuvers can have.[2]

Ways of producing these four basic teaching maneuvers are described more fully in the body of The Stucture of Teaching.

The Nine Models of Teaching

In the Appendix to this component nine models of teaching are described in considerable detail and reference is made to the theoretical positions from which the models are derived. The models include:

1. An inductive teaching strategy developed from the work of Hilda Taba.
2. A strategy for inducing the students to attain concepts derived from work by Jerome Bruner and his associates.
3. An inquiry training model developed from work of Richard Schuman who developed a training program to help children build scientific theories.
4. A cooperative inquiry model derived from the position of Herbert Thelen on the democratic process as it is applied to teaching.
5. A non-directive model developed from the work of psychologist Carl Rogers on ways of helping students to teach themselves.
6. A differential training model derived from work by David E.

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[1] Bruce R. Joyce and Benj. Harootunian, The Stucture of Teaching (Chicago: Science Research Associates, 1967,) pp. 94-95.

[2] Ibid., p. 111

Hunt, which provides means of adjusting teaching strategies according to personality characteristics of the students.
7. A teaching strategy derived from the analysis of a process.
8. A programmed model developed from the research on operant conditioning conducted by B. F. Skinner and his followers.
9. A model developed from the work of Abraham Maslow dealing with the development of an intergrated personality.

These nine models represent very widely known theoretical positions on education. They do not exhaust all possibilities, but the component provides for the exposure of the teacher candidate to yet other positions which he can translate into going teaching strategies. Note the emphasis on introducing the candidate teachers to a variety of theoretical positions on teaching. We take the view that the teacher should not be taught that certain types of teaching are good for all occasions and should become the preferred strategies. Some teacher education programs emphasize non-directive or democratic methods to the exclusion of all other methods and have discouraged directive teaching. Other teacher education programs have emphasized directive teaching to the exclusion of other methods. Yet others emphasize particular approaches to education (as Montessori methods) or to specific ways of teaching certain subjects (as science). Our position which is that the student should have available to him the best of the spectrum of educational theories and the ability to implement them in the classroom. Critical to this mastery is both comprehension of theoretical positions and the clinical capacity to execute strategies derived from them.

The Behavioral Objectives of the Component

The behavioral objectives of the teaching strategies sub-component occur in four levels. The four levels are generally sequential in that it is probably most likely that a student will progress through the four levels more or less in order, but as usual in this program the suggested sequence can be altered greatly. Even so, it is probably best to explain the component to each inquiry group in terms of sequential levels because the explanation is much more compact and reasonable that way.

Level One Objectives

Objective One: The teacher discriminates the four basic types of teaching maneuvers and their uses:

1. Maneuvers to induce productive thinking
2. Maneuvers to induce mastery of content and achievement of skills
3. Maneuvers to induce self-direction
4. Maneuvers to structure activities.

The teacher should be able to explain a theoretical position underlying the use of each of the maneuvers. He should also be able to discriminate the maneuvers in episodes of behavior produced by teachers and to examine learner reaction to them.

Objective Two

The teacher can demonstrate an example of each of the four teaching maneuvers. He can create a lesson or plan for an encounter with children so that it will include the use of each one of the four maneuvers and can execute the maneuver when teaching children so that it is distinguishable by his fellow candidates and faculty counselors.

This level of achievement is essential to the development of the teacher. A teacher who cannot accomplish these two objectives or equivalent ones is in no position to teach except in the most limited sense of the term.

Level Two Objectives

This level takes some time to accomplish. It represents a basic knowledge of theoretical positions about learning and a basic repertoire of teaching strategies on which the teacher candidate can build.

Objective Three

The teacher candidate can identify the nine teaching models described in the Appendix to this chapter and the theoretical positions that underlie the models. This means that he has knowledge of the theoretical positions of Taba, Thelen, Rogers, Schuman, Hunt, Maslow, etc. Also, when he observes teachers working with students he is able to distinguish the model or strategy that is being used.

Objective Four

The teacher candidate can build and execute lessons utilizing each of the nine strategies. This means that the teacher can prepare objectives within a curriculum area, select an appropriate model, develop a lesson for a series of lessons around the model and execute it in the classroom with appropriate adjustments to the particular learners.

This is another critical objective in this program. While it is probably not essential that all nine teaching strategies be mastered, a reasonable repertoire needs to be established consisting of these or their equivalent. All do not need to have to be produced magnificently, but they should be recognizable and reasonably smooth. Since it is possible to build instructional materials around several of the models, it is possible for the teacher candidate to satisfy this requirement partially through the creation of instructional materials. For example, strategy number eight is a "programed" strategy derived from Skinner's work in operant conditioning. This provides a paradigm around which programed instructional materials can be developed. Similarly, the "advance organizer" model can be used for a television presentation or for written materials which are presented to students. Some of the other models require face-to-face teaching (as for example, the cooperative inquiry and the non-directive models).

Level Three Objectives

At this level, the teacher works within particular curriculum areas developing the teaching strategy necessary to work comfortably within that area.

Objective Five

Within at least one curriculum area (his specialty), the teacher identifies a basic repertoire of teaching strategies and learns to execute them while working with children.

The teaching strategies may be derived from models like ones included in the Appendix here which have been developed specifically within the curriculum area (as for example, the area of reading or mathematics instruction). To accomplish this objective the teacher candidate needs to acquire a knowledge of the major systems for organizing instruction within the curriculum areas concerned, identify the teaching strategies which are recommended or which are appropriate within that area and then he needs to learn how to put those ideas into practice.

It is important for the teacher to learn a balance range of strategies which are developed from the different positions toward learning that are taken by theoreticians and practicioners within the curriculum areas. For example, in the social studies area some authorities favor the democratic process model which is similar to the one contained in the Appendix here. Others prefer the directive model. Recently we have seen strategies developed from process analysis brought into the social studies field, in the form of simulation or legislation simulations. Yet others either have developed teaching strategies which are derived directly from the subject disciplines. A teacher who is developing control within a curriculum area should try the strategies recommended by the different schools of thought so that he can judge for himself what it is like to work with children from those positions and because he needs a repertoire that will enable him to seek a wide range of objectives with many different learners.

Objective Six

The teacher will learn to carry out teaching strategies that utilize contemporary technical support systems.

The specific nature of the strategies, and the technologies, will depend on the curricular specialties of the teacher candidate and the ages of the children he works with. For a language teacher, the "language laboratory" is an example of a technical mode. In the social studies, televised programs are an example.

Level Four Objectives

Objective Seven

The teacher candidate develops and tests a model and strategy of his own or adapts one of the general models or one of the subject-area-specific models which he has learned in this component.

The objectives of this component relate in a number of ways to those of several others and sub-components. For example, the sensitivity component provides means of adapting teaching strategies to particular learners and uses especially the differential strategy which is derived from the work of David Hunt. Objectives Three, Four, Five, and Six are closely related to the instructional decision-making sub-component and to the curriculum decision-making sub-component. Objectives Three and Four are prerequisites of the Structuring sub-component.

The Rationale of the Component

The first phase of the component is a modification of the previous work by Amedon, Flanders, Allen, Medley and Mitzel, Joyce, and others in which they have demonstrated that teachers can learn to analyze specific small behaviors in teaching and to master the relatively small units of behavior which Joyce and Harootunian have called "maneuvers". The general paradigm operates as follows: The teacher learns to discriminate the desired behaviors, attempts to produce them, obtains feedback with his peers by examining episodes which have been recorded on audio or video tape, and, with coaching, repeatedly practices the behaviors until they are mastered.

While it might be possible to develop the entire component in this way (teaching the teacher to discriminate relatively small behaviors and then building them up into a comprehensive whole) the course that we have chosen here is to follow this practice only until the teacher has developed a limited basic repertoire consisting of the four maneuvers that have been identified above. From that point, he moves to larger and more meaningful units of teaching behavior which have been developed from major theoretical positions on learning. The inquiry group, as it studies these major positions and attempts to produce the strategies that have been derived from them, gives itself a rather thorough course in educational psychology and learns to operationalize psychology in the classroom. Teaching needs to be a purposeful activity which is essentially the continuous testing of hypotheses about learning. If we concentrate only on small units of teaching behaviors that can be "built up" into meaningful strategies, the focus would be on relatively meaningless "bits". However, when the focus is on strategies which are based on well thought-through and researched stances on learning and teaching, the meaningful unit becomes the focus of the program.

The component is also organized on the assumption that the rationalizations of teaching should consist partly of general models of learning and partly of models which are derived from the particular curriculum areas. Hence, after the general models have been mastered the component proceeds to the exploration of models within a particular curriculum area. A curious circumstance develops in many areas as a consequence of this. Many of the theoretical writings about instruction in the curriculum areas have been stronger with respect to the disciplines than with respect to the models of learning. Many of the products of the academic reform movement are elegant with respect to subject matter, but have almost no coherent teaching strategy. Other products consist simply of one expository unit after another. A few products, of course, have clear-cut and well-articulated strategies. The teacher often has to transform materials so as to teach concepts for the academic disciplines by applying general learning models to them or creating more effective models himself.

The Means of the Component

The conduct of the component will vary somewhat depending on whether it is taught as a whole or whether it is divided into several sections that occur at different points in the education of the teacher. The phases of the component, for example, could follow one another straight through an academic year and then lead right into internship or participation in the School as a Center of Inquiry. However, it could also be divided so that the mastery of the maneuvers and the introduction of the models could occur during one year, the study of the strategies within a particular curriculum area might follow during another year, and then the development of models and the use of strategies developed by the student himself might occur in yet another point in time.

However the component is divided, it begins with the organization of the inquiry group and the explanation to them of the behavioral objectives and the phases of the component which have been prepared beforehand. Then, as they proceed, they will no doubt transform both the objectives and the means in various ways. There are many advantages to keeping an inquiry group together throughout the entire component. A group that learns the basic maneuvers, learns about the nine basic models of teaching, masters them with children, then proceeds to the study of teaching strategies within the curriculum areas' specialities, and finally moves into a school, developing and testing its own strategies of teaching can have a very rich experience indeed. The activity can provide the substantive basis for relationships among the group of students who are becoming a reference group with respect to innovation.

The means are here described in terms of phases that are based on each of the four levels of behavioral objectives.

Phase One: Learning the Basic Maneuvers of Teaching

The objectives of this phase are identified above: to discriminate and learn to execute four basic teaching maneuvers. The component should begin with the reading of the Structure of Teaching by Joyce and Harootunian (Chicago: Science Research Associates, 1960), especially Chapter Three, "Teaching with Strategy." This identifies and explains the four maneuvers in some detail and provides a variety of examples for carrying them out.

The inquiry group (probably working in "feedback teams" should then set about the mastery of the basic maneuvers. Members should plan lessons which employ those maneuvers, teach the lessons to each other and to children, tape record and video-tape their performance, analyze their behavior and coach one another with the asistance of the faculty members. This process should continue until all members of the group have mastered the models satisfactorily. More than one maneuver can be engaged in during any one encounter with a group of students, but care should be taken that each new teacher masters it in such a way that it can be a prominent part of an important phase of a lesson or learning activity.

To identify the maneuvers in taped and video taped episodes the groups will find it useful to use the systems of analysing teaching that they are mastering during the research on teaching phase of the Teacher-Scholar component (Chapter Thirteen-D). Both the Gallagher-Aschner and the Joyce-Harootunian systems are useful for identifying the maneuvers to induce productive thinking and the maneuvers to produce achievement. The Flanders system and the Joyce-Harootunian systems areuseful for analyzing and improving maneuvers relating to the structuring activities and inducing students to structure activities for themselves. As will be noted in the organizational plans, the sub-components are correlated to make that possible. (Chapter Fourteen-A and Fourteen-B.) The early phases of research on teaching should come no later than simultaneously with the early phases of work with the strategies of teaching.

Phase Two: Learning Nine Basic Strategies of Teaching

In Phase Two the third and fourth objectives above are to be achieved. This involves learning the nine theoretical positions on teaching and learning from which the nine strategies have been derived and mastering the strategies as the basic repertoire of each teacher. The organization of the phase could take several forms. An inquiry group could simply decide which models they prefer to start with and then work through the models one by one. Or, each feedback group can do the same. It would also be possible to establish nine micro-teaching laboratories, one for each model, and the students could study individually with the other members of their feedback team serving as coaches. There are many advantages to the first course of action. It gives an opportunity for an inquiry group to explore fully the theoretical underpinnings of each of the positions on learning and to examine the alternative ways that each position can be worked out. For example, the "concept-attainment" model is taken from some fairly sophisticated psychological research and is worth some substantial study. As the candidates learn the model, as a group, with ten or twelve of them working together, each one building lessons around the teaching strategy, the richness of the strategy will become apparent as will its wide applicability. The faculty member can help the students explore the ways that it can be applied to a wide variety of subject matters and how it can be shaped in a variety of forms.

The same is true of the other models, for strategies have been selected which are extremely versatile and if they are explored fully they become much more than nine versatile models of teaching. Three or four basic variations will emerge from each, making a repertoire that actually will consist of thirty or thirty-five workable teaching strategies.

Each candidate should persist in the mastery of the models until the other members of his feedback group and the faculty counselor are satisfied with his level of performance.

To identify fully the substance of this phase of the component it is necessary to read the descriptions of the models in the Appendix that follows.

Phase Three: Teaching Strategies Within a Curriculum Area

In the curriculum section of the institution-building (Chapter Eleven-B) component and the instructional decision-making section of the interactive teaching component (Chapter Ten-A) the teacher candidates learn the alternative patterns for curriculum and instruction within one traditional curriculum area of the school. Stress is placed on his mastering alternative systems for conceptualizing and organizing instruction within the curriculum areas. It is expected that each teacher will specialize in one curriculum area in order to provide him with an area of depth competence to which other learnings can be anchored and to provide him with an area of immediate competence once he is given the opportunity for responsibility within a school. In phase three of the present component the intellectual work involved in understanding the alternative systems of approaching the curriculum areas is combined with the clinical competence derived from learning to rationalize and execute teaching strategies and the focus is on development of competence within the curriculum area. To make this possible each feedback group needs to be given responsibility for teaching a group of children in a curriculum area. (As reading, arithmetic, social studies, science, art, music, modern language.) Or in the nursery school or kindergarten the group may be responsible for a phase of activities that is to be their speciality. The phase may be analogous to one of the curriculum areas above (as it would be if one took the approach to pre-school physical education that Bereiter and Englemann do). It may be a phase of activity such as language development which is related to the later work of the school, but which takes shape in the nursery school in a very different way from the later form. The feedback team then proceeds to develop a unity of activity that they carry out as a team, setting the behavioral objects, selecting the learning model and deriving the teaching strategy from it, building the materials that are needed, carrying out the activity and testing hypotheses about learning. They execute the unit as a group, although individuals may handle particular aspects or stages of the work.

The faculty role in this phase of the component is particularly important for the experiences are lengthy and complex ones and are not easy to repeat. The activity needs to be as successful as possible during its first execution. A feedback team may get opportunities for several such activities, but it is a costly learning experience and one which cannot be prolonged unnecessarily. As a result the faculty member wants to take care that the plans of the group are very adequate. They need to meet the children and to work with them in diagnostic settings before making their plans. The faculty member should be consulted frequently as to the adequacy of the plans before they are put into effect.

Phase Four: The Development and Execution of Original Models

In this phase the feedback team is assigned within the school as a center of inquiry or they are helping to operate the enrichment and remedial school. They have full responsibility for a group of youngsters and their charge is to shape a substantial segment of activity developing or adapting a model, creating the instructional materials and carrying it out fully. The phase extends phase three. The group may select a technological mode of a particular kind or it might even be assigned to a technological mode within the enrichment school or the remedial school and have to adapt a strategy for that particular mode. While it does not take much space to describe this phase it is as complex as the preceeding one and the faculty members'roles are again critical for the plans need to be tested against him and against other experienced teachers to assure that they are reasonably adequate before teaching begins. Again the activity should be carried out as an experiment. The teaching strategy should be phrased as a hypothesis that certain teaching behaviors will have certain effects on the learners and the hypothesis should be tested.

The Administration of the Component

The component requires faculty members who have mastered the maneuvers and models themselves and who continue to find opportunities to teach children and to sharpen their mastery. The component is difficult to administer because it is highly complex and much is left to the judgement of the faculty members and the process which develops within each inquiry group. It is an extensive component, taking a long period of time to complete, and each of its four phases are complex in themselves. The last three phases are exceedingly difficult.

The first and second phases require extensive taping, video-taping, and filming of teaching and suitable space has to be made available.

The component has to be correlated carefully with the contact laboratory on which it depends:

Correlation Between Contact Laboratory
and Teaching Strategies
Component

Teaching Strategies Phase	Type of Activity	Contact Laboratory Phase
Phase One	Learning Basic Maneuvers	Phase Two (Tutorial)
Phase Two	Learning Basic Strategies	Phase Two (Tutorial)
Phase Three	Unit Experiment in Curriculum Area	Phase Three (Unit Experiment)
Phase Four	Unit Experiment with own Strategy	Phase Four (Remedial or Enrichment School)

As in so many of the components in interactive teaching component the availability of audio tape recorders, video tape recorders, and other devices for reproducing the episodes of teaching are critical. Again it seems that the only practical way to supply the human services to make those available is to employ the student teachers themselves as operators of the equipment and give them both the opportunity of learning from such participation as well as the availability of equipment that is self-operated.

Provisions for Feedback and Differential Training

Feedback in this sub-component is fairly automatic because of the nature of the learning activities. A teacher is constantly aware whether he has mastered the maneuvers or models and his goal is always before him. In the latter two phases the faculty member has to take an extremely active role, particularly in the planning stages, and the research consultants have to work with the students to develop the systems for testing their hypothesis about teaching. The differential training model is very easy to administer. In the first case, as we have said immediately above, achievement is easy to measure and the learners' tasks can be closely matched to their achievement. (A person has or has not mastered a given model or maneuver and as a result of that fact does or does not continue to master it.) Modulating the structure of the first two phases to suit the cognitive orientation of the students is fairly easy. In the second two phases it is not so easy and the faculty member is dependent almost entirely on his own judgement. If the students need a great deal of structure he has to provide it personally. The structure of the component itself, while it permits modulation of structure, has no built-in provison for it. It depends entirely on the maneuvers of the faculty member himself. The value orientations of the students, on the other hand, are very easy to accomodate. They can begin with the maneuvers and models that they prefer. For example, some will prefer non-directive teaching methods and they can begin mastering non-directive teaching models rather than highly structured ones. The converse is also true. Feedback preference is also easy to accomodate, for the faculty can move in and out of the situation providing or withholding authority as the students seem to need it.

Evaluation

The evaluation of achievement is embedded in the methods as they have been described. Each feedback group monitors its members' progress through the mastery of the maneuvers, the models, the development of models within the curriculum areas, and the creation of original teaching strategies. Because the creation and implementation of original teaching strategies is conducted as an experiment the evaluation procedures have to be constructed in order to carry out the activities.

It should be stressed that achievement of the objectives of this component is essential to the success of the teacher education program. This is one of the components where only a very narrow tolerance of underachievement can be made. A student who does not develop the basic repertoire of teaching maneuvers and strategies will be an educational cripple.

Appendix: Chapter Ten-B

Models of Teaching

"Models for Teaching"
describes **seven strategies.**

"A Teaching Strategy Derived from a
Psychology of Health"
describes an eighth.

"Models for Teaching"

by

Bruce R. Joyce
Teachers College, Columbia University

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Models for Teaching

by Bruce R. Joyce
Teachers College
Columbia University

The purpose of this paper is to provide the intellectual structure for a component of a teacher education program that introduces to the teacher a set of models for teaching, or teaching strategies, which he can learn to carry out with children. These models can constitute for him a basic repertory of strategies which are useful for various teaching purposes. The substance of the paper consists of a system which can be used for describing teaching strategies explicitly enough that they can be mastered by the teacher. Then nine teaching models are described and analyzed in terms of the paradigm which is set forth in the early part of the paper.

The young teacher who learns these models should also read the theoretical sources from which they are drawn so that he will have a full comprehension of the intent and usefulness of the model and its theoretical roots. While some attention will be paid to the theoretical roots of the models in this paper, a comprehensive treatment cannot be made in an limited space. Hence, bibliographical sources are provided with each model.

Finally, it should be emphasized that even though the nine models constitute a fairly substantial basic repertory for teaching and for curriculum development, the mastery of the models should be regarded by the teacher only as a beginning. He should search for other models in the theoretical literature and by analyzing the practice of teachers and curriculum workers. In addition, he should develop the capacity to invent models of his own that are compatible with his personal style and the kinds of learning which he wishes to foster. One word of definition is also appropriate before we begin. That is, the word "teacher" when used in this paper shall refer to a teaching agent of some kind. A teacher may be a machine, or a set of instructional materials, a human being, or a group of children. The models which are described, then, can often be used to shape instructional materials or for building the specifications of learning machines, as well as for guiding the activities of the individual teacher.

In recent years, the term "teaching strategy" has come into common use in education. It refers to the design of an educational process or environment, and consists of specifications of the means that are to be used to achieve some educational goal. Teaching strategies are employed in several ways. First, teaching strategies are used in curriculums, and at that level they consist of the overall design for the curricular means within a subject area, or a group of areas. Second, teaching strategies are used to guide the behavior of teachers as they interact with children; they serve as models for units of lessons. Third, teaching strategies are used to shape instructional materials, or instructional systems, which have no teaching strategy are very likely to achieve their goals only by chance - they are likely to wallow along. Carefully designed teaching strategies are as essential to a coherent curriculum, lesson, or instructional system, as are carefully specified objectives; strategies relate to means as behavioral objective to direction.

A good bit of educational analysis and research is beginning to be devoted to the topic of teaching strategies. Historians, like Harry Broudy, for example, (1) have analyzed the stances of philosophers in the past in terms of teaching method or strategy. Empiricists, as they have studied the verbal and non-verbal behavior of teachers in the classroom, are developing knowledge of the strategies that are performed by teachers of the present day. (2) Also the developers of curriculum plans and instructional systems are beginning to talk very explicitly about their teaching strategies and about the means for generating more effective strategies. (3)

In this paper, we will look at teaching strategies that are derived from six sources, and we will look closely at one teaching strategy which has been derived from each of them. The six sources that we will consider are: models of mental processes, models of social processes, theories of human development, models or conceptual systems drawn from the academic disciplines, models developed from analyses of skills or natural processes, and models drawn directly from theories of learning. The six sources which are concentrated on in this paper provide a good idea of the range of possibilities and of some of the more interesting developments that are now taking place.

The extension of the discussion into models from several sources is done deliberately. Our purpose in dealing with models drawn from so many different avenues is to illustrate the enormous range of possibilities that lie before us, and by implication to make clear the dangers inherent in assuming that curriculums or teaching, or instructional systems, should as a matter of course follow one or two or three of the more popular strategies that are being used today. For example, it seems to this observer that far too many instructional systems today are using the programed strategy. My feeling comes, not from any antipathy to operant conditioning, which I feel is extremely valuable for certain purposes, but more from my concern that many instructional systems are using operant conditioning where a different strategy would, in fact, be more appropriate, had the manufacturers of the material considered it. Similarly, today as in the past, there is a craze for inductive teaching strategies. While inductive teaching is no doubt appropriate for many worthwhile ends, I would think it a pity if it came to dominate teaching. While inductive teaching is salutary for teaching inductive reasoning, there are alternative strategies available that can accomplish many other purposes at least as well, and perhaps much better, than inductive teaching can. In short, I have come to the belief that the educational menu for today's youngster should include curriculums, encounters with teachers, and encounters with instructional systems representing among them a range of strategies that are appropriate to the spectrum of educational ends which are necessary for a thorough and vigorous education.

Let us begin by looking at some of the dimensions along which teaching strategies can be analyzed and define some terms that we can use to make our discussion explicit.

Describing Teaching Strategies

Since the function of a teaching strategy is to provide a model or a paradigm around which an educational environment can be built, it has to establish a blueprint on which a curriculum, or a media package, can be built, or on which the teacher can model his behavior so as to achieve desired effects. It is important, then, that a teaching strategy be constructed so that it can be acted on. Curriculum workers, teachers, and media specialists have to be able to do the things it asks, or it will not work for them.

In this paper, we will look at several aspects of teaching strategies that provide us categories that can be acted on. In the first case, we will describe teaching strategies in terms of their syntax, or structure, by which we mean the phases of activity and the purpose of each phase, and the relationships between phases of activity. Second, we will describe the social system, or social structure, which is to be created. We will describe that in terms of the sharing of initiatory activity by teacher and learner, and the amount of control over the activities that emerges from the process of interaction. Third, we will describe the principles which govern the reactions or responses by teachers or materials to the activity of the learner. For example, in some strategies, the teacher attempts to respond to a learner's activity by being extremely supportive of what the learner does and attempting to reflect it back to the learner so that the student himself can be assisted in deciding what to do next. In other strategies, the teacher corrects the learner and reshapes his behavior along a pre-determined line, or a set of prescriptions that have been prepared in advance. The principles, in short, tell the teacher or the materials-maker how to program his behavior as a learning activity or unit develops. A fourth aspect of a teaching strategy is the optimal support systems which are needed to facilitate the teacher's and learner's behavior. Strategies vary widely in the support they need, and some support systems are highly specific.

For example, one can construct an inductive teaching strategy in history which requires learners to reconstruct historical events by making inferences from original source documents. That strategy must be supported with sets of original documents in some kind of storage system where learners have access to them, otherwise obviously the major activity cannot take place. Similarly, strategies which employ individualization of learner activity require appropriate materials by which many learners of differing capacities and achievement levels, perhaps even learning styles, can engage in activity which is suited to their particular needs and make-up. Yet other strategies need to be supported by teachers who have a high degree of subject-matter or pedagogical competence. For instance, some strategies for teaching foreign languages specify the need for teachers of virtually "native" fluency. Others do not, but depend on teachers who have the skill to administer highly complex sets of self-instructional materials or "language laboratories." It is worth noting that a great many attrative teaching strategies never come to fruition because support systems are not developed to back them up.

Let us look at a teaching strategy drawn from each of our six sources, (models of thinking, models of social process, models of human development, systems from academic disciplines, models of skills, and models drawn from learning theory), and examine it in terms of the four concepts which have been briefly indicated above (syntax, social system, principles of reaction, and support systems).

Taba's Inductive Strategies

A Model Derived from Analysis of a Mental Process

The late Hilda Taba was probably more responsible than any one else for the popularization of the term "teaching strategy," and in her work with the Contra Costa school district she provided a first rate example of the development of a teaching strategy from a model of an intellectual process. The strategy formed the backbone of a social studies curriculum.(4)

Taba analyzed thinking from a psychological and logical point of view, and came to the following conclusion. "While the processes of thought are psychological and hence subject to psychological analysis, the product and the content of thought must be assessed by logical criteria and evaluated by the rules of logic." (4:36) She identified several postulates about thinking, beginning with the notion that thinking can be taught; second, that thinking is an "active transaction between the individual and the data in the program."

"This means that in the classroom setting the materials of instruction become available to the individual mainly through his performing certain cognitive operations upon them: organizing facts into conceptual systems, relating points in data to each other and generalizing upon these relationships, making inferences and using known facts in generalization to hypothesize, predict, and explain unfamiliar phenomena. From this it follows that the conceptual schema and the mental operations which an individual acquires cannot be taught in the sense of being 'given by a teacher' or of being acquired by absorbing someone else's thought products. The teacher can only assist the processes of internalization and conceptualization by stimulating the students to perform their requisite processes while offering progressively less and less direct support from the external stimulator." (4:34) Taba's third idea was that the processes of thought evolve by a sequence which is "lawful." She postulated that, in order to master certain thinking skills, you had to master certain others earlier and that the sequence could not be reversed. Therefore, "this concept of lawful sequences requires teaching strategies that observe these sequences." (4:35) In other words, Taba concluded that specific teaching strategies needed to be designed for specific thinking skills and that, furthermore, these strategies need to be applied sequentially because thinking skills arise sequentially.

She then developed a set of cognitive tasks, or thinking tasks, and then developed sets of teaching moves, called teaching strategies, which would induce those tasks. To illustrate this, let us look at one of these - the task of concept formation. This cognitive task involves, grouping those items according to some basis of similarity. Last, it involves the development of categories and labels for the groups. In order to cause students to engage in each one of these activities within the tasks, Taba identified teaching moves in the form of questions which she called "eliciting questions" which would be likely to cause the student to engage in the appropriate type of activity. For example, the question, "What did you see?" might induce the student to enumerate a list. The question, "What belongs together?" is likely to cause people to group those things which have been enumerated or listed. The question, "What would you call these groups?" would be likely to induce people to develop labels or categories.

Thus, the *snytax*, or structure, of the concept-formation strategy is designed around the process of concept formation which serves as the model for the strategy. The first phase is "enumeration," the second is "grouping," and the third is "developing categories." The teacher guides the development by the use of the appropriate eliciting questions. The *social system* is cooperative, with much pupil activity, but the teacher is the initiator of phases and controls information flow. The teacher's *principles for reacting and responding* are to be sure to match his moves or eliciting questions to the specific cognitive tasks, and to be sure that the cognitive tasks occur in order. That is, the teacher should not direct a grouping question to a person who has not yet enumerated or listed, and if the teacher is operating with a group, he must be sure that the enumeration and listing is completed and understood by all before proceeding to the grouping questions. The prominent moves by the teachers are questions, and they are eliciting questions modelled after the cognitive functions. The *support systems* which are necessary are sources of raw data which can be organized. For example, statistics about economic factors in various nations of the world could provide the raw data for concept formation lessons which induce children to build categories of economic comparison and contrast among the nations.

Taba developed strategies to function in curricular systems and also to guide teachers as they developed and carried out units and lessons. In all probability, the same strategies could be adapted to structure media-based instructional systems. For example, television-mediated lessons could follow the concept-formation paradigm which Taba described. However, because teacher and learner would not be in direct contact, the strategy would have to be modified or employ in certain roles teachers who work directly with the learners.

There are many other interesting examples of teaching strategies which are designed from a model of an intellectual process, dating from Dewey's early work. Torrance's in identifying teaching strategies for use with the gifted has proceeded from an analysis of creative processes or divergent thinking. Hullfish and Smith have developed extensively strategies developed from conceptions of "reflective" thinking, and Massialas and Cox have done the same with respect to inductive thinking. (5)

Summary Chart # 1

Taba's Inductive Strategies

Syntax	Phase One	Phase Two	Phase Three
	(Collect Data)	(Identify Similarities and Differences)	(Make and Label Groups)

Reaction by Teacher	Supportive, must shape distinctive activity in each phase, however. (For example, if a group is working together, data collection must be completed before analysis begins.)
Social System -	Cooperative, but teacher initiates and controls movement. Intellectual tasks, however, are performed by children. Moderate Structure
Support Systems	Sources of raw, ungrouped data.

(fix up categories for models - do section on amount of structure in the situation - setting up for "strength" training --)

Concept Attainment

A Model of Teaching Drawn from a Description of the Cognitive Process

In recent years, many psychologists have begun to turn their attention to the study of the ways in which humans acquire and process information about their environment. In this section we will concentrate on the work reported by Bruner, Goodnow and Austin in 1956. (23)

Bruner, Goodnow and Austin studied the process by which humans form concepts of categories which enable them to describe similarities and relationships among things in the environment. They begin (23:1) with the assertion that the environment is so tremendously diverse and man is able to discriminate so many different objects that "were we to utilize fully our capacity for registering the differences in things and respond to each event encountered as unique, we would soon be overwhelmed by the complexity of our environment." In order to cope with the environment, therefore, we engage in the process of categorizing, which means that we "render discriminately different things equivalent, ... group the objects and events and people around us into classes, and ... respond to them in terms of their class membership rather than their uniqueness." (23:1) In other words, we invent categories. We use these categories to manipulate our confusing world. This process of categorizing or forming concepts benefits us in five ways. First, it "reduces the complexity of the environment." (23:12) Second, it gives us the means by which we identify objects in the world. Third, it reduces the necessity of constant learning. For example, once we have learned what an automobile is, we do not have to discover, at each encounter with an automobile, that it is an automobile. We simply need to find out whether or not it has certain identifying properties. In the first case, it gives us direction for activity. If we know that we've liked eggs before and that they are nutritious, it helps us select eggs rather than some other substances that we might eat for breakfast. In the last case, it helps us to organize and relate classes of events, for example, the subject disciplines, or cognitive maps, or sets of interacting categories that we use for rendering the world comprehensible, ordering it, and making decisions about investigations and their meaning. (23:12,13)

Bruner, Goodnow, and Austin devote their major work to the description of a process which is called concept attainment, which is the process by which we discriminate the attributes of things, people, events and place them into categories. In the discussion, they identify (p. 41ff) three types of concepts. One is conjunctive, which means that the category is defined by the joint presence of several attributes, or characteristics. For example, red-haired boys is an example of a conjunctive category. When we find a boy who is also red-haired, we have an example of the concept. We also describe disjunctive categories and relational concepts (those in which there is a certain relationship between defining attributes). A relational category, for example, is that there are more accidents when people drive at higher speeds on narrow roads. Holding narrowness of road constant, drivers at higher speeds will have more accidents.

Concept attainment, according to Bruner, Goodnow, and Austin, occurs by making decisions about what attributes belong in what categories. The process of attaining a concept which has been invented by someone else is the process of determining the criteria by which they have placed certain attributes into certain categories. For example, let us suppose that a college senior is trying to describe (to someone who is trying to get him a blind date) the kind of girl that he would like to be matched up with. In order to do this, he is trying to *communicate* his concept and his friend is trying to *attain* the concept. Our senior communicates by identifying to his friend several girls both known who fit his concept of a desirable date and several who do not. In the middle of his description, his friend interrupts him and finally says, "Ah, I see." "Aha!" he says. "You like girls who are shorter than you are and prefer blondes," his friend said. "You also like girls who laugh a lot, and you tend to avoid girls who are very good students and are very intelligent."

"You've got it, but how did you know?"

"All the time you were talking, I kept thinking about why you had put each girl on the preferred and not-preferred lists. Gradually, I began to get the idea that those were the reasons why you did it. For example, most of the preferred girls were short and only one was a good student."

The above process by the match-maker was one of concept attainment. His friend has the concept of the girls he liked to date, and they could be defined by several attributes. As soon as his friend began to see by what concepts the girls were being discriminated into the two classes, he had attained the concept and was able to act.

Now, let us look at some examples of teaching concepts to children, and then proceed to describe the model.

Teaching the Concept of a Concept

Quite frequently students have difficulty developing concepts. A promising approach is to teach them, as closely as possible, what a concept is. An interesting approach is to provide the students with samples of information, some of which contain examples of a concept and some of which do not. The students know only which samples example the concept and which do not. Gradually, they are presented with more samples until everyone has developed an opinion about the concept. Then, by analyzing the process each student went through, one may be able to help them understand the nature of a concept and strategies for forming them. Let us try an example of this procedure. Each of the following passages is labelled "yes" or "no" depending on whether it represents a concept that I have in mind. As you read the passages, think of the concepts that the "yes" passages might represent: the principle by which they were designated "yes" and the others that were designated "no".

* * * *

A group of children are playing on the playground.
One of the students makes an error that lets the other side
win a point. The other children crowd around him, shouting YES
at him. Some take his side. Gradually, the hubbub subsides,

and they all return to the game.

* * * *

The above passage *does* provide an example of the concept. What concept? Is it playground, or games, or punishment, or children? What are the other possibilities? Let us turn to another passage in which the concept is *not* contained.

* * * *

Four children are sitting on the floor of a room. There is a rug, and they are shooting marbles. At one point there is a dispute over a shot. However, the problem is soon settled, and the game resumes.

NO

* * * *

This passage contained a game, so we have to eliminate that concept. There was an arguement, so we have to eliminate *that* possibility. What are some of the other concepts that are and are not exemplified in this passage and the previous one? Let us look now to another example in which our concept *is* represented.

* * * *

It is bedtime. A harried mother is putting the children to bed. It is discovered that one of the children has not scrubbed his teeth. The mother berates the child, sending her back to the bathroom and her toothbrush. When she returns, the mother smiles, the children crawl into bed, and the lights are put out.

YES

* * * *

What is our concept? Is it punishment? Is it, possibly, simply children? Let us look at one more passage in which the concept is present?

* * * *

It is a track meet. One boy crosses the finish line in the one mile race far ahead of his competition. Yet, the next two runners cross the line, straining all the way as they vie for second place. As they slow down after the race, their parents and friends crowd around the, praising them for their effort.

YES

* * * *

Now, we must rule out punishment. However, if we develop a larger concept, such as "things people do to influence one another's behavior" or "sanctions," or some concept that includes, "approval and disapproval,"

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then we have one that could describe the principle on which the selections were made.

This "game" could continue through several more passages. However, we have included enough to illustrate its principle. It focuses attention on the basis on which we have made a categorization. Because that basis is not revealed clearly at first, we have to keep several possibilities in mind. Gradually we receive more information that enables us to eliminate some possibilities and think of some new ones. Hence, we are involved in a search for the concept on which the division was made, a search that helps throw light on the nature of concepts that provide a basis for categorizing events. It helps us identify the mental process that we must go through if we are to make categories.

Before turning to the usefulness of this "concept of a concept," let us look at a more difficult example of the exercise. The following list of nations is marked "yes" or "no" beside each nation. The task is to determine the principle on which the yeses and no's were assigned.

Ghana	yes
France	no
Kenya	yes
Germany	no
Chad	yes
Denmark	no
Egypt	no

At this point, if "African" was thought to be the basis for the division, it has to be discarded. What possibilities remain?

Peru	yes
Japan	no
England	no
Ecuador	yes

Have you arrived at a concept? Are the nations being divided on a basis of the extent of their economic development? Is it their voting patterns in the United Nations? What possibilities remain?

Russia	no
Polynesia	yes
Indonesia	yes
Canada	no

And on and on we might go, developing and discarding principles. Students who begin to get the idea can begin to make their own categories and examples and try them out on each other.

However, the real payoff of this concept game occurs when we begin to apply it to materials which are not arranged so as to help us be conscious of the categories that are being employed, when, for example, we turn to the analysis of passages in which authors have grouped material without a complete explanation of the basis for the grouping. For example, consider the following passage.

"Despite the ceremonial talk about the common destinies of the peoples of the Western Hemisphere, and the shared blessings of representative government and democratic ideals, and so forth, there never had been any real rapport between Anglo-Americans and Latin Americans. Anglo-American culture was derived from the British Isles and the European Countries of the North Atlantic, and it was Protestant, commercial, middle-class, prosaic and static.

Latin American culture was derived from Spain, Portugal, and Rome, and it was Catholic, non-commercial, caste-ridden, humanistic, colorful, and passionate."[A]

Let us see what principles Carleton has used for identifying Anglo-American (United States and Canadian) culture:

Protestant	yes
Catholic	no
Commercial	yes
Single Class	yes
Prosaic	yes
Passionate	no
Colorful	no

But, we say immediately, there are many Catholics in Anglo-America, there are many classes and castes! His stereotype doesn't hold up very well, although there may be some truth in it. Whereas his prose is interesting and persuasive, a careful analysis of the concept he is using bids us take caution and equally, helps us see more precisely just what he is saying.

The following passage from a fifth grade social studies text will bear the same kind of analysis:

"Cuba is the world's largest producer and exporter of sugar. The United States has been one of the largest consumers of Cuba's sugar. Would Haiti and the Dominican Republic import Cuban sugar? Why or why not? Tobacco is Cuba's second most important crop.

"We have had many links with Cuba. The United States helped Cubans win their independence from Spain. We enjoy Cuban music and we like the rumba and other Cuban dances. Cuban baseball players play on our big league teams. Thousands of people from the United States have spent their vacations in Cuba. Many of our nation's businessmen have invested money in Cuban enterprises.

"Cuba has been a free nation less than a hundred years. Its people have not had a long time to learn to govern themselves. Several times dictators have gained control of the government. Each time, the people of Cuba have overthrown the dictators and attempted to establish a government 'of the people'."[B]

It seems that this passage has as its intent to create (or avoid creating) an attitude toward the Cuban people. Let us examine the concept that the authors had toward the friendliness of the relations between the United States and Cuba.

[A] William G. Carleton. The Revolution in American Foreign Policy (New York: Random House, 1965), p. 100.

[B] Paul R. Hanna, Clyde F. Kohn, and Robert A. Lively. In the Americas (Chicago: Scott, Foreman, 1962), p. 310.

United States is a customer of Cuba with respect to sugar
(Implies at least working relations.)

United States helped Cuba win their independence
(Implies that relations were very close.)

"We" enjoy Cuban music and dances
(Implies that we are favorably disposed toward their leisure culture.)

Cuban baseball players play professional baseball in the United States
(Implies that they have imported and are successful at one of the games that originated in the United States.)

United States citizens have spent many vacations in Cuba
(Implies friendship again, since one hardly vacations where he is not wanted.)

United States businessmen have invested much money in Cuban enterprises
(Again implies stable relations.)

Cuban politics are a struggle between democracy and tyranny
(Again implies kinship with United States aspirations.)

Now, we may note that many of the statements in these paragraphs were put in the past tense--the unwary reader might not notice this--and nowhere is there an outright statement about Cuban-United States relations. The concept, however, that the reader is allowed to reach, if he is not careful, is that extremely cordial relations exist between Cuba and the United States. Yet, as we all know, that is not quite the picture of reality--one needs a good bit more information before his concept will fit the case as it is.

It is worthwhile for a teacher to include early in the year some lessons intended to establish an understanding between himself and his students of what a concept is and then to apply this as they analyze resources, whether books, films, or visitors.

Students also can develop their own categories, as we have illustrated--and concept-building activity should probably be one of the major activities in any social studies unit.

Describing the Concept Attainment Teaching Model

Syntax or Structure

The first phase of the model involves presenting data to the learner. The data may be events or people or any other discriminable unit. The units of information are delineated to the learner as belonging or not belonging as examples of the concept. The learner is encouraged to speculate about the concept or principle or discriminatory concept which is being used as the basis of selection of units of data. In the next phase, students may be encouraged to compare their hypotheses concerning the concepts and their reasons for their choices. In succeeding phases, further units of data may be presented as before, and the above procedure may be repeated until there is concensus about the concepts. In succeeding phases, learners begin to analyze their strategy for attaining concepts.

For example, some learners initially try very broad constructs and then gradually narrow the field or become more specific in their statement of the concept. Others move rather quickly to specific concepts and combinations of them. Concept attainment strategies are particularly interesting when relational concepts are being considered. Suppose that units of data are presented which compares countries by agricultural productivity in relation to technological level, (use of fertilizer, and so on), climate, general level of development of the country, and so on, and the students are attempting to attain concepts of relationship among the several factors. In such a complex case the strategies students will use will be varied and interesting. (See A Study of Thinking for examples of different strategies.)

Social System or Structure

In the initial phase the teacher presents data and designates it as belonging or not belonging as an exemplar of the concept. (This designation is in sharp contrast to the typical move of the teacher when he tells people what a concept is.) In the latter stages, when students are beginning to analyze and compare their strategies for attaining the concept, the teacher shifts to an analytic role, but again draws the students into analysis, being exceedingly careful not to provide them with the criteria by which they can judge their strategies. If it is desired to improve students' efficiency in attaining concepts, successive concept attainment lessons are necessary with subsequent analyses of the effectiveness of various strategies. The teacher is the controller, then, but the atmosphere is cooperative and the procedures of the lesson stay closely in tune with the learners.

Principles of Teacher Reaction and Response

During the flow of the lesson, the teacher wants to be supportive of the students' hypotheses about concepts, but to emphasize that they are hypothetical in nature and to create a dialogue in which the major content is a balancing of one person's hypotheses against another. In the latter phases of the model, the teacher wishes to turn the attention of the students toward analysis of their concepts and strategies, again being very supportive. He should encourage analysis of the merits of various strategies rather than attempt to seek the one best strategy for all people in all situations.

Optimal Support Systems

Concept attainment lessons are extremely difficult unless data sources are available and have been classified according to concept. It should be stressed that the student's job in a concept attainment strategy is not to invent new concepts, but to attain the ones that have been previously attained by the teacher or teaching agent. Hence, the data sources need to be known beforehand.

Utility of the Model

The concept attainment model is widely useful. In many senses, much of language learning can be viewed as concept attainment in as much as the society has already devised categories of things and labels for those categories, and the language learner attains those concepts and learns those labels. The same is true in the learning of the vocabulary of a foreign language. It is even true in terms of the grammar or the syntactic structure of every language in that the linguistic structure consists of relational concepts of various kinds that need to be attained. To learn the structure of the disciplines to attain the concepts of that discipline. In mathematics, for example, the basic properties of integers, the commutative, the associative and distributive properties, are existing concepts which become attained by the mathematics student. Whenever students seem not to be understanding something, the concept attainment strategy can be brought into a play in an effort to establish the fundamental ideas which are at the root of the difficulty. Because of its great flexibility, the concept attainment model can be adapted to entire curriculums in the various disciplines and it can be the basis for extensive man-machine systems. It can function as a model for television teaching, both when the teacher is seen and when the medium is used to carry an instructional sequence without a visible teacher.

Summary Chart #2

Concept Attainment Strategy

Syntax

Phase One	Phase Two	Phase Three
Present Data - Indicate Positive and Negative Exemplars.	Students Present and Analagy Concepts.	(May repeat one and two presenting more exemplars and revising concepts.)

Reaction by Teacher	Supportive. In Phase Two must turn discussion to concept-attainment strategies. Care must be taken to be sure students are clear about their task in Phase One.
Social System	Moderate Structure. Teacher controls action, but may develop into a free dialogue in Phase Two.
Support Systems	Data are needed in the form of discrete units that can be labelled as exemplars. Or - as students become sophisticated, they can share in making of data units (as when analyzing a document).

An Advance Organizer Strategy

A Model Derived from a Theory of Verbal Learning

The psychologist David Ausubel tends to accept the view expressed in Bruner's Process of Education (23) that each of the academic disciplines has a structure of concepts which can be identified and taught to the learner and which provide an intellectual map which can be used to analyze particular domains and solve problems in those domains. For example, Bruner would assume that political science contains sets of concepts that can be used to analyze political events and that these can be taught to learners in such a way that they can function so that when he tries to analyze political behavior and to solve political problems this structure will be available to him. For a complete view of this position, the reader should familiarize himself with Bruner's Process of Education and The New Curricula (24) in which various authors apply the Brunerian hypotheses to the specific subject disciplines. It is worth noting that nearly all of the curriculum projects of the late '50s and 1960s which are described as the new math, the new science, the new social studies, the new English, and so on, have made the same assumption and attempted to organize their materials accordingly.

Ausubel accepts this view, but attempts to extend it in terms of two principles which he says should govern the programming of content in the subject fields. The first is the idea of progressive differentiation. "The most general and inclusive ideas of the discipline are presented first, and are then progressively differentiated in terms of detail and specificity." (25:79) "The assumption we are making here, in other words, is that an individual's organization of the content of a particular subject matter discipline in his own mind, consists of a hierarchical structure in which the most inclusive concepts occupy a position at the apex of the structure and subsume progressively less inclusive and more highly differentiated sub-concepts and factual data." (25:79)

Ausubel feels that "optimal learning and retention occur when teachers deliberately order the organization and sequential arrangement of subject matter along similar lines." (25:79) By similar lines he means the type of hierarchical organization of concepts that has been described earlier.

The second principle Ausubel operates on is that of "integrative reconciliation" which means that new ideas are reconciled and integrated with previously learned content. In other words, the sequence of a curriculum is organized so that successive learning builds on what has gone before. (See Tyler, Basic Principles of Curriculum and Instruction, University of Chicago Press, 1951 for a thorough exposition of principles of sequence and the way they function in curriculum and instruction.)

The Essence of the Model

The salient feature of Ausubel's "Organizer Technique of Didactic Exposition," as he puts it, is to program sequences of content for learners so that each segment of learning material is preceded by a conceptual "organizer" which we can think of as an advance organizer. The organizer has a higher level of "abstraction, generality and inclusiveness of" the material and is selected on the basis of its "suitability for explaining, integrating, and interrelating the material." (25:81) An organizer is not to be confused with an overview or summary which is ordinarily at the same level of abstraction, as the material which is to be learned. An organizer is an idea, a general idea, which is fairly abstract relative to the material and which precedes the material. It functions cognitively to organize the material as it is presented; that is, it provides a kind of conceptual framework into which the learner will integrate the material. Ausubel recommends that in terms of unfamiliar material to the learner that a general "expository" organizer should be used to provide a wholistic conceptual structure to which the learner can relate the new material. The organizer provides "ideational anchorage in terms that are already familiar to the learner." (25:83)

When relatively familiar material is being presented to the learner, Ausubel recommends a "comparative" organizer which will help the learner integrate new concepts with "basically similar concepts in cognitive structure, as well as to increase discriminability between new and existing ideas which are essentially different but confusable." (25:83)

Let us look at an example of this. Suppose that the material that is to be presented to learners is a matrix of multiplication facts. This matrix might be preceded by the commutative property with respect to multiplication (that is that A x B = B x A). Then the exposition of the material in the multiplication matrix can be at least partly organized by the learner in terms of commutation; that is, he will be prepared for ideas like 3 x 2 = 2 x 3, and his memory task will be considerably reduced. The organizer, the commutative property, is more abstract than the multiplication facts themselves, but they are explainable in terms of it. In fact, they could be presented in commutative pairs. Later on, when the learner is being introduced to long division, a comparative organizer might be introduced that would stress the similarity and yet differentness of the division facts from the multiplication facts. For example, whereas in a multiplication fact, the multiplier and multiplicand can be reversed without changing the product, that is 3 x 4 can be changed to 4 x 3, the divisor and divident cannot be reversed in division without affecting the quotient, that is 6 divided by 2 is not the same as 2 divided by 6. This comparative organizer can help the learner see the relationship between multiplication and division and therefore anchor the new learnings about division in the old ones about multiplication, but at the same time can help him discriminate the new learnings so that he does not carry over the concept of commutativity to a place where it does not belong.

Let us look at the advance organizer model in terms of our four dimensions of a teaching model or strategy.

Syntax or Structure

The first phase of the activity is the presentation of the organizer which must be at a more general level than the material that is to follow. The second phase is the presentation of the material itself. In a sequence of learning activities, the first organizer and its materials should be hierarchically more abstract than the succeeding ones which get more and more specific and elaborate the original one. For example, in English, if the content were to deal with metaphors, the first organizer would deal with the general idea of metaphor and the content would illustrate that general idea. The next lessons would go into more and more specific kinds of metaphors and the ways they are used, so that the first unit of work with its organizer would intellectually anchor the material that was to come in the successive unit activities.

The Social System of the Model

Many people at first find startling Ausubel's proposition that an abstract idea should precede material rather than being discovered by learners who have analyzed the material. Ausubel is not an advocte of discovery learning, to put it mildly, and the really striking feature of the model is the presentation of that abstract idea ahead of the content which is to be learned. The social system, then, is controlled entirely by the teacher.

Principles of Reaction or Response by the Training Agent

In the flow of the lesson, the training agent can function to point out the conceptual anchorages for the material and to help learners see the relationship between the material that is being presented and the organizer. The teacher or the instructional material is the controller in the situation. The content has been selected for the learner, and the teacher should function to hem the discussion in around the material at hand.

Optimal Support Systems

Well organized material is critical. The advance organizer depends on an integral relationship between the conceptual organizer and the rest of the content. It may be that it works best as a paradigm around which to build instructional materials so that the time can be taken to insure complete relevance of content and organizer. However, the model was designed for use by the face-to-face teacher and can be, if the time is given to prepare lectures or other types of material carefully.

Applicability of the Model

The advance organizer model is another extremely versatile model in the sense that it can be applied to any material that can be organized intellectually. It can be used in nearly every subject area, although it was designed for use with verbal material rather than with skills and the mastery of problem solving paradigms. However, Ausubel assumes that it will be useful in the transfer of materials to new problem settings, and he presents some evidence to that effect.

As a model it provides very good discipline for lectures for reasons which were outlined above, especially because the content of the lecture would have to be very carefully related to the organizer, and the lecturer would not be permitted to ramble or digress without cause. Also it can serve very well in the analysis of expository materials in textbooks and other instructional materials where abstractions and information alternate in various patterns. It is worthwhile to examine lessons and units in several of the disciplines, and look for the ways in which organizers are are handled either consciously or unconsciously, for, it should be obvious by now, a teacher who is not careful can unwittingly present a poor organizer that will actually confuse the learner.

Summary Chart #3

Advance Organizer Model

Syntax	Phase One Presentation of Organizer.	Phase Two Presentation of Verbal Material to be Learned.
Reaction by Teacher	Teacher is seen as presenter. No consistent principles characterize the model.	
Social System	High Structure. Teacher defines roles and controls norms. Learner roles carefully defined.	
Optimal Support System	Development of organizer and system for presenting it is crucial. Material, however, must be organized so it pertains to the organizer.	

A Differential Training Model

Example of a Teaching Strategy Derived from a Developmental Theory

Let us now turn to a very different kind of teaching strategy which comes from a very different source. David E. Hunt's "Model for Analyzing the Training of Training Agents" describes a teaching strategy which is derived from a theory of personality development. (6) This theory describes personality in terms of the complexity and flexibility of an individual's conceptual linkages to his environment and postulates the kinds of conditions which would be likely to induce a person to develop along the continuum towards greater flexibility and complexity.

According to the developmental theory of Harvey, Hunt and Schroder, the optimal procedure for inducing individuals to progress towards complexity and flexibility is to match their present stage of personality development to the training environment, tailored to the characteristics of that stage, but in such a way as to pull the individual towards the next stage of development. The following chart indicates how personality stages and training environments can be matched in this way.

CHARACTERISTICS OF STAGE	OPTIMAL TRAINING ENVIRONMENT
I. This stage is characterized by extremely fixed patterns of response. The individual tends to see things evaluatively, that is, in terms of rights and wrongs, and he tends to categorize the world in terms of stereotypes. He prefers unilateral social relationships, that is, those which are hierarchical and in which some people are on top and others on the bottom. He tends to reject information which does not fit in with his present belief system or to distort the information in order to store it in his existing categories.	In order to produce development from this stage, the training environment needs to be reasonably well-structured, because this kind of person will become even more concrete and rigid under an overly open social system. At the same time, however, the environment has to stress delineation of the personality in such a way that the individual begins to see himself as distinct from his beliefs and begins to recognize that different people, including himself, have different vantages from which they look at the world, and that the rights and wrongs in a situation, and the rules in a situation, can be negotiated. In summary, the optimal environment for him is supportive, structured, fairly controlling, but with a stress on self-delineation and negotiation.

II. In this stage the individual is characterized by a breaking away from the rigid rules and beliefs which characterized his former stage. He is in a state of active resistance to authority and tends to resist control from all sources, even non-authoritative ones. He still tends to dichotomize the environment. He has difficulty seeing the points of view of others, and difficulty in maintaining a balance between task orientation and inter-personal relations.	The delineation of self which is suggested above is now taking place, and the individual needs to begin to reestablish ties with others, and to begin to take on the points of view of others, and to see how they operate in situations. Consequently, the training environment needs to emphasize negotiation in interpersonal relations and divergence in the development of rules and concepts.
III. At this stage, the individual is beginning to re-establish easy ties with other people, beginning to take on the point of view of the other, and in his new-found relationships with other people has some difficulty maintaining a task orientation because of his concern with the development of inter-personal relations. He is, however, beginning to balance alternatives and to build concepts which bridge differing points of view and ideas which apparently contradict each other.	The training environment at this point should strengthen the re-established inter-personal relations, but an emphasis should also be placed on tasks in which the individual as a member of the group has to proceed toward a goal as well as maintaining himself with other individuals. If the environment is too protective at this point, the individual could be arrested at this stage and, while he might continue to develop skill in inter-personal relations, would be unlikely to develop further skill in conceptualization or to maintain himself in task oriented situations.
IV. The individual is able to maintain a balanced perspective with respect to task orientation and the maintenance of inter-personal relations. He can build new constructs and beliefs, or belief systems, as these are necessary in order to accommodate to changing situations and new information. In addition, he is able to negotiate with others the rules or conventions that will govern behavior under certain situations, and can work with others to set out programs of action and to negotiate with them conceptual systems for approaching abstract problems.	While this individual is adaptable, he no doubt operates best in an inter-dependent, information-oriented, complex environment.

Now in the list above, the training environments are matched with each stage in such a way as to pull the person toward the next stage of development. A teacher or a therapist, or another trainer, who is operatin from such a theoretical position can develop teaching strategies which enable him to create the training environments which are postulated for learners of each category. One person who did exactly this with Hunt's strategy is Marguerite Warren who works in San Francisco with programs for the rehabilitation of delinquent boys and girls. (7) Warren has developed out of Harvery, Hunt and Schroder's developmental theory a set of teaching strategies which are taught to probation officers who then endeavor to match those strategies to the type of youngster they are working with. For example, if a delinquent is categorized within stage two, as a person who engages in severe resistance to authority, but who is delineating himself and discovering who he is, and who is in a process of rejecting his former belief systems and trying to establish a core of beliefs that will be his own, then the probation officer attempts to maneuver his own behavior in such a way that the optimal training environment is produced. That is, he tries not to impose authority directly on the trainee, but works to help him establish the rules for his own behavior, and to make agreements that they will both abide by the rules that they negotiate together. Further, he attempts to help the delinquent establish relationships with other people which are not hierarchical and where neither one attempts to impose his will on the other person.

Hunt's teaching strategy is aimed at the curricular level - it describes how to shape major aspects of an educational environment so that they are tailored to the characteristics of the learner.

The syntax of the strategy consists of the sequence of environmental types which are to be matched to the learner. Each type has a different social system, ranging from a high degree of teacher structure in the optimal environment for stage one to great interdependence at stages three and four. The principles for responding to the learner vary with each type of environment that is prescribed, as indicated above, and the differences are very important, for the essence of the strategy lies in the interpersonal relations that are developed. The support systems for such a strategy lie entirely in the trained teacher personnel. In such a strategy, the syntax or structure is not pre-determined. The trainer must be able to radiate a wide variety of behaviors, or, in other words, to produce the proper environment for each learner. If trainers are not flexible enough to do this, then there must be more than one trainer who can produce the teaching behaviors which are indicated at the proper times.

There have been several sets of interesting research studies which have explored the effectiveness of the teaching strategy derived from Hunt's developmental theory. In addition to Warren's use of the model for the rehabilitation of juvenile offenders, Hunt has used the structure to analyze the effectiveness of the Upward Bound programs. While the sample of Upward Bound youngsters did not run the gamut of the developmental stages, Hunt demonstrated that the interactions between training environment and personality were significant in terms of the kinds of growth that the Upward Bound programs were trying to schieve. 8)

Hunt has also taught the strategy to teachers of the inner city, who attempted to match environments to the kinds of culturally-deprived children they were teaching, and Joyce has used it in teacher education programs. (9) The model is interesting precisely because it provides a framework for analyzing learners and adjusting the school to their personality needs.

At present, there are a number of attempts to build differential (individualized) teaching strategies from developmental theories that pertain to cognitive development. For example and for criticisms, see the work of Edmund Sullivan of the Ontario Institute for Studies in Education. (10) The essence of these attempts is that one takes the descriptions of intellectual development which are described by Piaget and then attempts to produce teaching strategies which are calculated to induce the learner to engage in the intellectual operations which are appropriate to a stage slightly ahead of his present level of development. The work of Wallach and Kogan is interesting because of implications for teaching strategies based on conceptions of creativity and intelligence, looked at simultaneously.

Summary Chart #4

Hunt's Differential Model

Syntax	Varies according to trainee. For low CL students, low task complexity, high sequence, clear rules. For high CL students, emergent structure, higher task complexity. Idea is to aim one environmental level above trainee type.
Reaction by Teacher	Varies by student conceptual level. For low CL students, fairly controlling, clear, supportive. For high CL students, interdependent, mutual, greater task orientation.
Social System	Again, varies. High Structure with low CL students, low structure with high CL students.
Optimal Support Systems	Model is content-free. Supports should vary in task complexity, structure, etc.. Training agent must be able to radiate several teaching styles, as necessary.

Democratic Process

A Teaching Strategy Derived from a Model of a Social System

The most common example we have of the derivation of teaching strategy from a model of society is the translations that have been made of conceptions of democratic process into teaching method. Dewey's *Democracy and Education* (11) postulated that, in fact, the entire school should be organized as a miniature democracy in which students would participate in the development of the social system, and would, through this participation, gradually learn how to apply the scientific method to the perfection of human society, and would thus be prepared for citizenship in a democracy. This work has been extended into a conception of the social studies which has been well formulated by John U. Michaelis (12), who made central to the method of teaching the creation of a democratic group which would define and attack problems of social significance.

Let us look closely at the method that Herbert Thelen used to translate a democratic process model into a teaching strategy. Thelen begins with a set of postulates. He feels the need for a social image of man, "a man who builds with other men the rules and agreements that constitute social reality." (13:80) He sees the necessity for each individual to contribute "to the establishment and modification of the rules... to determine both its prohibitions and freedoms for action." (13:80) He states that the rules of conduct in all fields are interpreted within a larger body of ideas, ideals, resources, and plans, and so on, that constitute the culture of a society. "In groups and societies a cyclical process exists: individuals, interdependently seeking to meet their needs, must establish a social order (and in the process they develop groups and societies). The social order determines in varying degrees what ideas, values and actions are possible, valid, and 'appropriate.' Working within these rules, and stimulated by the need for rules, the culture develops. The individual studies his reaction to the rules, and reinterprets them to discover their meaning for the way of life he seeks. Through this quest, he changes his own way of life, and this, in turn, influences the way of life of others; but as the way of life changes, the rules must be revised, and new controls and agreements have to be hammered out and incorporated in the social order." (13:80) Thelen feels that education has failed to capitalize on this model largely because it has failed to realize that knowledge is a part of the continuous business of negotiating and renegotiating the social order. Some people have made the error of attempting to teach knowledge without teaching the process of negotiation by which it is manufactured and revised. However, he proposes...

"The educational model based on these working suppositions is Group Investigation. Given a group of students and a teacher in a classroom, some sort of social order, classroom culture, and 'climate' is bound to develop. It may develop around the basic value of comfort, of politeness and middle class morals and manners, or of keeping the teacher happy and secure. In these all too frequent cases the gaining of knowledge collapses to the learning of information, the meaning of information is respectively to stimulate bull sessions, develop conformity, or provide the teacher with materials to show off with.

"We propose instead that the teacher's task is to participate in the activities of developing the social order in the classroom for the purpose of orienting it to inquiry, and that the 'house rules' to be developed are the methods and attitudes of the knowledge disciplines to be taught. The teacher influences the emerging social order toward inquiry when he 'brings out' and capitalizes on difference in the way students act and interpret the role of investigator -- which is also the role of members in the classroom group. Under these conditions, the gaining of knowledge could serve initially only to validate the student's portrayal of the investigator role; but as the way of life of inquiring comes to dominate the social order, the purpose of gaining knowledge -- which by then will be inseparable (but not identical) with meeting personal needs in the group -- will have a powerful appeal in itself. And, of course, knowledge learnt in its essential, even if microcosmic, social context will be utilizable in the larger arena as well." (13:81)

Thelen goes on to postulate the particular elements of a teaching strategy. "The first requirement for group investigation is a teachable group: one which can develop a sense of common cause, one whose members can stimulate each other, and one whose members are psychologically compatible and complementary. The students are assigned a consultant (teacher) who confronts them with a stimulus situation to which they can react and discover basic conflicts among their attitudes, ideas, and modes of perception. On the basis of this information, they identify the problem to be investigated, analyze the roles required to solve it, organize themselves to take these roles, act, report and evaluate the results. These steps are illuminated by reading, possibly by some short-range personal investigation, and by consultation with experts. The group is concerned with its own effectiveness, with its discussion of its own process as related to the goals of the investigation." (13:82)

Let us look at Thelen's group inquiry strategy, or group investigation strategy, in terms of the four concepts we've been using. The syntax begins with the teacher's confronting the students with a stimulating problem. If the students react, the teacher draws their attention to the differences in their reaction, the different stances they take, the things they perceived, the ways they organized things, the various feelings they had. As the students become interested in their differences in reaction, the teacher draws them toward the formulation of a problem. As they formulate the problem, they proceed to develop an attack on the problem, the teacher again serving the role of a consultant and friendly critic. As the investigation proceeds, re-evaluation is made of the plans and as the problem's "solution" is achieved, it is evaluated in terms of the purposes of the group. The cycle begins to repeat itself, either with another confrontation or a problem development which arises out of the process of investigation itself. The social system, hence, is democratic.

The critical moves by the teacher have to do with setting up the confrontation, although that confrontation does not need to be a verbal confrontation -- that can be the provision of an experience -- and then, after the confrontation, with turning the group's inquiry toward their own reaction, and moving so as not to structure their problem for them, but to induce them to formulate it for themselves.

From that point the principles of reaction of the teacher are to function as an academic counselor, playing what you might think of as a vigorously recessive role in which the teacher is vigilant not to intrude structure, but is equally vigilant to get the children to examine what they're doing and to improve it.

The support systems for this kind of teaching need to be extensive and responsive to the needs of the students. If this kind of teaching is going on inside a school, the school needs to be equipped with a library which can function effectively as a very responsive random-access data storage and retrieval system filled with information contained in all kinds of vehicles. The school also needs to provide access to resources outside of it. The children need to be able to go outside, both for their own investigation, and also to contact resource people as their expertise is needed. One reason a cooperative inquiry of this sort has been relatively rare has been because the support systems were not adequate to maintain that level of inquiry.

Strategies derived from social processes are useful if one wants to try to teach that process by having the students practice it. School personnel should also use such strategies to build the social system of the school -- to teach the students a system for operating effectively. A. S. Neill has built many aspects of Summerhill around such a strategy. (14) The Valley Winds School (15) experiment was another example of an attempt to build a school social system through a strategy derived directly from an analysis of a social process.

Summary Chart #5

Democratic Process Model

Syntax	Emerges from the group process. Initiated by confrontation with problem situation, however.
Teacher Reaction	Directed at group process. Helps learners fromulate, plan, act. Facilitative Role.
Social System	Democratic Process. Low External Structure.
Support Systems	Must respond to variety of learner demands. Teacher and students must be able to assemble what they need when they need it.

The Inquiry Training Program

A Model Derived from an Analysis of Scientific Inquiry

The inquiry training model was developed by J. Richard Suchman when he was at the University of Illinois. The primary reference is J. Richard Suchman, *The Elementary School Training Program in Scientific Inquiry*, the University of Illinois, 1962, a Report to the United States Office of Education on Title VII Project No. 216. Suchman, as do Bruner and Hunt, operates from information processing theories of cognitive behavior. His model comes partly from a model of scientific inquiry. As such, however, it is generalized, in that it is not specific to physics, or anthropology, or any other single discipline, but comes from a general analysis of the methods employed by creative research personnel. The objectives of the inquiry training model are, in Suchman's words: "to develop the cognitive skills of searching and data processing, and the concepts of logic and causality that would enable the individual child to inquire autonomously and productively; to give the children a new approach to learning by which they could build concepts through the analysis of concrete episodes and the discovery of relationships between variables; and to capitalize on two intrinsic sources of motivation, the rewarding experience of discovery and the excitement that is inherent in autonomous searching and data processing. We wanted inquiry training to consist of activities that were for the most part autonomously controlled and intrinsically rewarding." (p. 28) The critical element of the strategy was to put the students into a situation where they would have to try to find out the answer to a puzzling situation. "The children were confronted by an episode to explain, or in other words, a series of discrepant events to be assimilated. We used short physics demonstrations as the problem episodes. They were recorded on motion picture film and accompanied by a title which simply asked why a particular outcome of the demonstration had resulted." (26:29) Suchman uses the examples of a bimetallic strip which is bent when it is held over a Bunsen burner flame. "The strip is made of a lamination of unlike strips of metal (usually steel and brass) that have been welded together to form a single blade. With a handle at one end it has the appearance of a narrow knife or spatula. When this apparatus is heated, the metal in it expands, but the rate of expansion is not the same in the two metals. Consequently, half of the thickness of this laminated strip becomes slightly longer than the other half and since the two halves are attached to each other the internal stresses force the blade to assume a curve of which the outer circumference is occupied by the metal which has expanded the most.

"The child who encounters this problem must contend with the following variables: the temperature of the blade, the shape of the blade, the structure and composition of the blade, the length of the blade. These are all highly relevant to the problem at hand and the inquirer must sample them at various times during the demonstration to determine changes. In addition there are innummerable other variables which, although irrelevant to the bending, must be considered by the child before he can determine this fact. The position in which the blade is held during the heating, the composition of the handle, the source of heat, the upward pressure of the gas flame are just a few of the variables which concern the typical inquirer, but which do not affect the bending appreciably. If the child immediately tries to hypothesize complex relationships among all the variables that seem relevant to him, he could go on testing indefinitely without any noticeable progress, but by isolating variables and testing them singly he can eliminate the irrelevant ones and discover the relationships that exist between each relevant independent variable (such as the temperature of the blade) and the dependent variable (which in this case is the bending of the blade)." (26:15-16)

It is the kind of episode, that is the bending of the strip when it is held over the flame, that is used to confront the learner and to begin the inquiry cycle. Suchman and his collaborators deliberately selected episodes that would have sufficiently surprising outcomes that it would be difficult for a child to remain indifferent after the encounter. How does the child proceed? He proceeds by asking questions of the teacher, and the teacher attempts to respond to the child's questions by facilitating his discovery. However, he structures the situation. "First, the questions must be so structured as to be answerable by 'yes' or 'no'. This eliminates all open-ended questions and forces the children to focus and structure their probes. In a sense each question becomes a limited hypothesis. For example, the child may not ask: 'How did the heat affect the metal?' but he may ask, 'Did the heating change the metal into a liquid?' In the first instance the child does not state specifically what information he wants, is asking the teacher to conceptualize relationships for him, to teach him something." (26:30) The child is permitted to continue to ask questions, and whenever he phrases one which cannot be answered in a "yes" or a "no", the teacher or training agent reminds him of the "rules of the game" and waits until he finds a way of stating the question in the proper form. The teacher also, as the child attempts to inquire in the above fashion, tries to lead the children to a strategy whereby they confine their early questions to an analysis of the situation they have observed, trying to find out what things have been made of, what actually happened, and that kind of thing. Next they turn their questions to relationships among variables. Then, even later, the teacher works with the children to help them analyze their inquiry and to try to formulate principles about "the logical structure of causality and strategies of inquiry. Each time, the children check their performance against these rules, against this background of very concrete experiences, revived and made immediate through the recordings, the children can begin to conceptualize the structure of inquiry and see the shape of the strategies they are being urged to use and the consequences of using them or not. With each session, the children see more clearly the success they achieve by following the pattern which reinforces the use of these systematic and productive operations." (26:35) In addition, the teacher attempts to help the students learn a set of concepts, or a structure, as Suchman calls it, for the analysis of causality. (See 26:35-37 for a description of the structure which can be taught to the children.)

Analysis of the Model

Syntax or Structure

The model usually has three phases. In the first phase comes the confrontation with the problem. In the second phase is the period of children's questioning with the teacher responding only to questions that can be answered with "yes" and "no" answers. The third phase is the analysis of the children's strategy with emphasis on pointing out the consequences of their strategies and helping them become more causal in their questioning and to follow the general schema of establishing facts first, determining what is relevant second, and building concepts of relationship or explanation third.

Social System of the Model

Critical moves are those by the teacher which move the inquiry sessions from phase to phase. Probably most important is the insistence of the parameters of the game in the second phase, and shifting the level of discussion to an analysis of inquiry strategy in the third phase. Hence, the structure is very high and the social system is controlled entirely by the teacher.

Principles of Responding or Reacting to the Children

The most important principle is to refuse, but in a supportive way, to give information during the second phase unless the questions are properly phrased, and during the third phase, when the children are analyzing their inquiry, to be extremely supportive and yet draw them toward an analysis of the consequences of their particular patterns of endeavor.

Optimal Support Systems

Two things are needed. One is prepared sets of materials that cause the vivid and ambiguous confrontations, and second a training agent who understands strategies of inquiry and can help the student to analyze their patterns and work toward greater effectiveness.

The Applicability of the Model

The model was designed and is most useful for attempts to teach children scientific methods of inquiry. Particularly, it helps them to analyze their own inquiry and compare the effectiveness of various strategies. The particular content can be drawn from any of the scientific disciplines, or a part of it from any domain when one is concerned with the improvement of thinking ability.

Summary Chart #6

Inquiry Training Model

	Phase One	Phase Two	Phase Three
Syntax	Confrontation with Ambiguous Situation.	Inquiry by asking questions.	Analysis of Inquiry Strategies.
Principles of Teacher Reaction		Establishes "Rules". Gives information only in response to properly - phased questions.	Deals with inquiry strategies - turns discussion toward analysis of alternatives.
Social System	Highly structured, especially in early phases. Moderate in last phase. As students gain experience, can become mutual.		
Support Systems	Problem - Confronters are needed. (See Suchman for specifics.)		

Client-Centered Teaching

A Model Drawn from a Stance on Therapy

The psychologist Carl R. Rogers describes in Client-Centered Therapy (Boston, Houghton Mifflin, 1951) a comprehensive approach to therapy, and in the latter chapters of the book he extended the position on therapy to teaching and to other endeavors. Chapter IX "Student-Centered Teaching" (28:284ff) is the particular application to education. Rogers stresses that student-centered teaching would not be applicable for all societies. He feels that it should be one of the primary methods of education in a democratic society, and that it is suitable for the following goals.

"This would seem to mean that the goal of democratic education is to assist students to become individuals

> who are able to take self-initiated action to be responsible for those actions;
> who are capable of intelligent choice and self-direction;
> who are critical learners, able to evaluate the contributions made by others;
> who have acquired knowledge relevant to the solution of problems;
> who, even more importantly, are able to adapt flexibly and intelligently to new problem situations;
> who have internalized an adaptive mode of approach to problems, utilizing all pertinent experience freely and creatively;
> who are able to cooperate effectively with others in these various activities;
> who work, not for the approval of others, but in terms of their own socialized purposes." (27:387-388)

Rogers proceeds from his stance on therapy to postulate the following principles or hypotheses about teaching. "We cannot teach another person directly; we can only facilitate his learning.

"A person learns significantly only those things which he perceives as being involved in the maintenance of, or the enhancement of, the structure of self.

"Experience which is assimilated but involves a change in the organization of self tends to be resisted through denial or distortion of symbolization.

"The structure and organization of self appears to become more rigid under threat; to relax its boundaries when completely free from threat. Experience which is perceived as inconsistent with the self can only be assimilated if the current organization of self is relaxed and expanded to include it."

The next principle seems to follow from the above.

"The educational situation which most effectively promotes significant learning is one in which (1) threat to the self of the learner is reduced to a minimum, and (2) differentiated perception of the field of experience is facilitated." (27:389-391)

Applying these principles to the classroom, Rogers suggests several tasks. Central is the creation of an acceptant climate. Rogers suggests that this can be accomplished by beginning by having the students define their purposes. The teacher accepts the purposes which are given forth and in helping the students to identify their common and unique objectives. In the second phase the individuals and group identify purposes on which they wish to act. He stresses that these may change from session to session and that purposes which were set several weeks before should not be followed automatically later on, but that each meeting of a group should begin with a re-assessment and restatement of purpose. During a course, or even during a session, the role of the leader changes tremendously. He quotes from Shedlin, "that the formation and during the early stages of the group the activity of the leader should be largely one of acceptance of the students and understanding of their output. He should be non-judgemental in his desire not to intrude upon the value system of the students. This may be termed mood-setting action. It removes threat and consequent defensiveness. He functions as an emotional and ideational sounding-board. His attitude is one of respect for and reliance upon the group members to plan activities and derive satisfaction and growth according to the needs and intents of each individual member. As the group develops and the atmosphere is a known consistent quantity to the students, the actions of the leader should subtly change to match the altered relationship. He is then in a position to participate more freely on a 'this is how I feel about it' basis without preventing continuing analysis and exploration by the members of the group..." (27:399-400). Rogers believes that this way the group becomes more efficient than groups which are taught in traditional manners or through lectures, and that they reach more deep and significant content more readily and they handle it more thoroughly.

Let us analyze this strategy according to the paradigm which we have been using.

Syntax or Structure

The structure of the unit or lesson or course emerges as the teacher and student interact. There is no pre-structure. The students set purposes and, as the group develops a common bond and climate, then the learning experience becomes shaped.

Principles of Reaction or Response by the Training Agent

Let us quote directly from Rogers. "Initially the leader has much to do with setting the mood or climate of the group experience by his own basic philosophy of trust in the group which is communicated in many subtle ways. The leader helps to elicit and clarify the purposes of the members of the class, accepting all aims. He relies on the students' desire to implement these purposes as the motivational force behind learning. He endeavors to organize and make easily available all resources which the students may wish to use for their own learning. He regards himself as a flexible resource to be utilized by the group in the ways which seem most meaningful to them in so far as he can be comfortable operating in these ways. In responding to expressions from the group, he accepts both the intellectual content and the emotionalized attitudes, endeavoring to give each aspect the approximate degree of emphasis which it has for the individual and the group. As the accepting classroom climate becomes established, the leader is able to change his role and become a participant, a member of the group expressing his views as those of one individual only. He remains alert to expressions indicative of deep feeling and when these are voiced he endeavors to understand these from the speaker's point of view and to communicate this type of understanding. Likewise, when group interaction becomes charged with emotion, he tends to maintain a neutral and understanding role in order to give acceptance to the varied feelings which exist. He recognizes that the extent to which he can behave in these differing fashions is limited by the genuineness of his own attitudes. To pretend and accept an understanding of a viewpoint when he does not feel this acceptance will not further, and will probably hinder, the dynamic progress of the class."

Social System

The teacher is to be non-directive. This is the characteristic role in both the therapeutic stance and the educational stance taken by Rogers. Learning is a change in the self; it is very personal and it comes only when the self is free and open to new experience. Rogers may well believe that it is impossible to pre-program instruction in any effective way.

Optimal Support Systems

The optimal support center is, of course, the non-directive teacher and then a very open-ended intellectual resource, such as a contemporary library in which the students can have random access to things as they move along and identify and reshape their purposes.

The Applicability of the Method

If one takes Roger's view toward therapy in learning, the method is indispensable in a democratic society, and is widely usable to further all kinds of inquiry and self-inquiry by the learner.

To persons who may not accept that extreme view, the method is probably most widely useful in helping individuals develop more adequate selves and more fully motivated personalities with respect to self development and the acquisition of learning.

There are no subject matter limitations. The method has been employed in nearly every area and is being employed as a basic teaching method in elementary schools, secondary schools, and colleges. In pages 403 and following, in Roger's Client-Centered Therapy, there is an extensive example and analysis of an example of the method. Elsewhere in this model, in the components dealing directly with the development of the self, the stance by Brown may be seen to be similar in many respects to that which is propounded here as a teaching model.

Summary Chart #7

Non-Directive Teaching

Syntax	Entirely emergent. Oriented toward group processes and personal emotional reactions of students, as well as toward learning tasks, which must be set by students.
Teacher Reaction During Encounters	Student-centered. Helps students form group and individual purposes. Probes their motivations.
Social System	Very Low Structure. Exceedingly permissive. Assumes that purposes must flow from students.
Optimal Support Systems	Probably same as in Democratic Process Model, e.g., supports need to respond as purposes are developed.

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A Teaching Strategy Derived from a Psychology of Health

(From: Abraham Maslow. Toward a Psychology of Being, Princeton: I. Van Nostrant Co., 1962.)

Representative of a third force psychology, distinct from both the behavioral and Freudian approaches, Abraham Maslow espouses an optimistic psychology of health and growth. The goal of this psychology is "self-actualization" or "full-humanness," the development of the biologically based nature of man. Self-actualization is defined as both the a) "acceptance and expression of the inner core or self, i.e., actualization of these latent capacities and potentialities, full functioning, availability of the human and personal essence and b) minimal presence of ill health, neurosis, psychosis, loss or diminution of the basic human and personal capacities." (p. 184)

Maslow derives the characteristics of self-actualizing people from his own studies of psychologically healthy people. He has focused on "peak" experiences in the lives of average people. He demonstrates his optimism when he states that "... most people (perhaps all) tend toward self-actualization and ... in principle, at least, most people are capable of self-actualization." (p. 149)

At the center of his psychology is the notion of an essential biologically based inner nature which is good or at least neutral in character. This inner nature has certain basic needs which must be satisfied before the organism can go on to the pursuit of higher needs, i.e., learning. These basic needs are safety, belongingness, identification, love, respect and prestige. Deprivation of these satisfactions leads to neurosis. What distinguishes healthy people from sick people is that the former's basic needs have been sufficiently satisfied and that they are now motivated by growth needs, i.e., trends toward actualization of their potentials.

To teach, it is necessary to provide an environment in which the student is safe, approved, and encouraged to reach out for new experience. The teacher can, in such an atmosphere, offer attractive avenues to learning and the learner will be likely to choose those which seem self-enhancing and not threatening. Punitive teaching methods, attempts to pressure students, difficult or embarrassing tasks, will increase threats and results in an aversion to learning.

What happens when we translate this into a teaching strategy?

The Syntax or Structure of the Strategy

The syntax or structure must vary for each child, depending on his particular needs and how "safe" he feels in going on. Whereas much educational theory is based on the idea that learning is the best way to satisfy a need with goal objects external to the organism, Maslow suggests that external satisfactions are much less needed. The general structure should therefore be one which emphasizes a move from external goal objects toward internal goal objects as the individual's needs are satisfied.

The Critical Moves by the Teacher

The essential job of the teacher is to bring out each child's inner nature, encourage personal growth, permit the child to be himself and be open to experience. Since every individual suffers a basic conflict between the forces that pull him back towards safety and forces that promise new experience, the teacher must seek to make growth more attractive and delight producing so that the child will naturally choose it. Only the child who feels safe will go forward. At the same time that the teacher encourages the child towards growth, he must continue to be sensitive and respect the child's natural fears and defenses. It is in this sense that the teacher is like the therapist. Thus, the really good teacher "practices as if he understood that gentleness, sweetness, respect for fear, understanding of the naturalness of defensive and regressive forces are necessary if growth is not to look like an overwhelming danger instead of a delightful prospect." (p.51)

Principles of Reaction or Response by the Training Agent

In the flow of the lesson, the teacher must be sensitive to the needs of each child. He must first gratify the basic needs of safety, belongingness, etc., so that the child feels unthreatened, autonomous, interested and spontaneous. He must then help make the growth choice positively attractive and less dangerous by encouraging the child to try new experiences. Simply having the new experience will make the child prefer it. The teacher must offer these new experiences but not force the child into them. At each step he must respond by being available as the child desires his presence. At the same time he must know how to get out of the way if this is what the child wants. The teacher offers the new experiences and helps the child progress towards more complex and richer experiences all the while respecting the child's need for safety and letting the child choose spontaneously in accordance with his own nature.

The most important move by the teacher is the attempt to satisfy the child's basic needs realizing that the main path to health and self-fulfillment of the individual student will only grow through basic need gratification.

Optimal Support Systems

Since the need for safety is stronger than curiosity and the need to know, and it is the anxiety-free person who is the curious and exploring person, there must be a creative and safe educative situation.

The atmosphere must be "permissive, admiring, praising, accepting, safe, gratifying, reassuring, unthreatening, non-valuing and non-comparing." (p. 50) The child must feel completely safe and unthreatened. He must be given real opportunity to work out and express his hostilities for only then will he spontaneously go on to higher experiences. The support system must always help the child to actualize his own potentialities, attain identity and integration of the self, lead him to self-knowledge and self-discipline and make learning self-validating so that the individual looks for guiding principles from within.

Chapter Ten-C

Flexibility Training: Reaching the World of the Learner

While a teaching strategy is a theoretically-based guide for teaching and curriculum-making, it should not operate as a Juggernaut, rolling over the students, regardless of how they respond to it. Strategies should be reshaped as the child reacts (or fails to react) to them. Sometimes a strategy should be discarded entirely, and a completely different approach begun. Often, indeed, teaching should begin, not with a strategy, but from an encounter between the world of the student and the world of the teacher. To modify his strategy, to reach into the world of the learner and teach directly to him the teacher needs to behave flexibly. Flexibility is required to adjust teaching to the competence of the learner, to his preferred modes of working to ensure that the procedures enhance his feelings about himself, to build concepts between the learner and what is to be learned, and to accommodate an emotional reaction to the material. Flexibility training refers to the attempt to help the teacher become more sensitive to the world of the child, particularly to the ways that the child processes information about the world and reacts emotionally to encounters with it. Included in flexibility is the capacity on the part of the teacher to modify what he is doing in order to accommodate to the system of the learner. (For example, if the learner is very rigid in interpersonal relations he will betray this in many ways. The sensitive teacher will be able to pick up the cues to identify the rigidity and will modify his approach either by working with the youngster so that the rigidity is no great handicap to him, or by modifying his procedures so as to try to lessen the rigidity itself.) These processes (entering the world of the learner and modulating teaching activity to "fit" or capitalize on the learner's world) comprise flexibility in teaching.

Hence, flexibility, or the lack of it, is very much a part of the ongoing flow of interactive teaching. And -- it is a very complex part of teaching. The behavior of a student which gives us clues to his ways of organizing the world accrue quickly and are ephemeral. They occur in a setting where many learners are usually present and each learner behavior (voice, expression, gesture) is only one of a number which might be interpreted by the teacher. For a teacher to take in the behavior of a group of youngsters, figure out their ways of looking at the world, and to modify his behavior appropriately is quite a feat. Yet, if the teacher is not flexible, teaching can become detached from the students, lessons can miss the mark, and disaffection can occur between the teacher and his student. Teaching requires continuous small adjustments of technique, personality, and pace. Flexibility is central to the process.

The Processes of Flexibility

The development of the flexibility component has been made possible because of the work of David E. Hunt, who has developed a method for assessing the interpersonal sensitivity and flexibility of a teacher as he is interacting with the learner. Hunt took the stance that it is useful to regard the pupil as an information processing system. The rules or principles of his system govern the kinds of information that he will extract from his environment, the ways he will react to information and assimilate it, and the kind of responses that he is likely to make over a period of time. This information-processing system is assumed to operate by reasonably consistent rules which can be discovered by the teacher. As the learner interacts with the teacher, for example, he emits behavioral cues. He responds verbally to what he sees or hears. His facial expression changes. In body movements he manifests excitement or apathy. If the cues are interpreted correctly they will yield to the teacher a large quantity of information about the information processing that is going on.

In order to examine the ability of teachers to pick up the behavioral cues of learners and interpret them Hunt devised an assessment device called the Communication Task.[1] In this task a teacher is presented with the problem of teaching a concept to a single learner. The learner in actuality is a role player who has been trained to operated in such a way that his reaction to the lesson is governed by a frame of reference which conflicts with the concept that is to be taught. The role player is trained to give cues to the teacher about the frame of reference that would be in conflict with the concept, then observations can be made of the teacher's ability to pick up the cues, identify the learner's frame of reference, and alter his approach so as to take the learner into account.

Specifically the teachers are asked to teach the concept of checks and balances as they operate in the organization of the United States Federal Government. The role player simulates a learner who was a Venezuelan immigrant applying for citizenship in the United States. The excuse for the tutorial lesson is that the role player needed help to pass his citizenship examinations. It is explained to the teacher that he had been having a great deal of trouble with the concepts of checks and balances. The role player is trained to a frame of reference that conflicts with any idea of negotiable checks and balance. His frame of reference is that government is a unilateral affair in which the best system provides for a boss who is on top and citizens,who are obedient,beneath. Similarly in interpersonal relations the role player believes,or pretends to believe, that hierarchy and unilateral power are the only things that work. In other words, teaching him a concept which includes mutual give-and-take will clash with his view of social relations.

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[1] David E. Hunt, "The Communication Task", unpublished manuscript, Syracuse University, 1965.

During the lesson the learner provides the teacher with cues about this frame of reference. For example, after the teacher has explained the parts of the government that check and balance one another, the role player responds, " Now the president is the real boss,isn't he? He tells these other people what to do." Throughout the lesson he continues to maintain the idea that the president is the kind of big boss who has unilateral authority over other citizens and other branches of the government. At some point he will ask "The people elect the president, don't they and they try to elect a good man? And then why don't they just let him run things?" And so it goes. The learner reacts to the other branches of government in a similar way. He compares judges to priests who "Tell us what's right and what's wrong.",and when he is exposed to the procedures which can be used to override a presidential veto, interprets the process as different elements of the government "ganging up to stop the other guys." He also manifests skepticism about the efficiency of democratic procedures. ("The way you guys do this thing it must take an awful long time to get anything done.")

As the role player provides each verbal cue to the teacher, observers rate the teacher as he in turn responds. The observers are looking for his recognition of the frame of reference of the learner and whether or not he modifies his strategy in order to build a conceptual bridge between the learner's view and the one he is trying to teach so as to bring them together. Flexibility is defined as this recognition of the learner's frame of reference and a subsequent adjustment of teaching behavior in an attempt to accommodate the learner's stance.

Some teachers grasp the problem and begin immediately to develop a strategy which will build a conceptual bridge between the student and the concept. For instance, one teacher who had been giving a verbal presentation of the concept of checks and balances shifted to an analogy of a restuarant and approached the concept in concrete terms. ("Well, George, you work in a restuarant don't you? And there is a boss there, right? And this boss tells some of the workers what to do? Now, suppose the boss prepares some food the customer doesn't like. What are some of the things a customer can do?") That teacher tried a fresh way of illustrating the point he was trying to teach, fishing for a way of helping George come to appreciate the negotiation as one way of solving problems.

Other teachers continued their presentation as if the role player had not spoken, entirely failing to recognize that he was not grasping the idea and in fact had a conflicting concept of his own. Some try to catechize the "learner". For example, some say, "George, I wish you'd stop interrupting. Instead of raising all of these questions suppose you repeat after me what I just told you about the functions of the judiciary." Other teachers, responding to George's queries, get defensive about the concept and simply tell George how good it is. ("Yes, George, of course it takes a long time to get everything done but it's the best way and nobody has invented a better way yet.") Some even get angry at George. ("No, George, the judges are not like priests. They do not tell us what is right and wrong and that's a very bad idea.")

In other words, teachers show a wide range of sensitivity during the communication task. Some appear to be extremely sensitive, able to figure out what George is really saying and to build conceptual bridges between their concept and his frame of reference. Other teachers do not seem able to grasp the idea. Some even make it hard for the role player to say what is on his mind. The strong impression emerges that a great many teachers present to the learner a phalanx of verbiage which leaves very little opportunity for the learner to respond.

Moving to the Classroom setting Hunt and Joyce[1] found, as other investigators before them, that many teachers' styles of teaching do not provide learners with much opportunity to provide cues about their thinking. Relatively few teachers employ the kinds of probing questions that assist in learning about the student's information processing system. As did Bellack, they found that the classroom discourse frequently seemed like a verbal game which is controlled by the asking of recitation-type questions and the giving of information by teachers. The question usually converged around particular subject matters, leaving little latitude for any learner response which would indicate more than his mastery of the material. They confirmed Flanders[2] finding that the classrooms of many teachers require a learner with something to say virtually to "swim up stream" against a vast current of teacher talk. In a few classrooms, however, teachers appeared to operate with a style that probed the learner and responded to what was found. These teachers asked questions which could not easily be answered by a "yes" or a "no" but which required the learner to phrase a response which would give clues to his thinking and feeling processes. These teachers legitimize communication by the learner on his terms, and they modify their procedures as they understand what he is saying.

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[1] David E. Hunt and Bruce R. Joyce - "Teacher Training Personality & Initial Teaching Style" - (American Educational Research Journal) Vol. 4, No. 3, May '67 pp - 253-259

[2] For a general presentation of work by Bellack, Flanders, and Hughes, see Bellack, Editor. Theory and Research in Teaching (New York, Teachers College, 1963).

While the research is by no means definitive, the evidence about classroom processes is sufficient that we are able to make a temporary definition of teacher flexibility and to build a component of a teacher education program which is designed to increase it. The processes are as follows :

1. The teacher regards each of the behaviors of his students as potentially significant. He believes the learner's behavior occurs in patterns which can be interpreted in terms of an information processing system.

2. The teacher can shift his style or strategy in such a way as to increase the flow of information from the learner about his frame of reference.

3. The teacher can make educated guesses about the frames of reference of particular learners.

4. The teacher can modify his style or strategy to build a bridge between the learner and himself and to reconcile his goals and strategy with the mind of the learner.

Modification can be made to: adjust procedures and objectives to the competence level of the learner; build a conceptual bridge between the learner and the teaching objectives; adjust procedures to match learner preferences and feelings of competence; or to accommodate an emotional response by the learner.

The Behavioral Objectives of the Component

As in the case of most of the other components, the behavioral objectives that are provided here are intended as starting points for faculty and students. As a component develops so should the objectives develop and change. The greater the competence and determination of the learners and the faculty the greater will be their transformation of what is given here. When this component operates at the in-service level we would expect the objectives to emerge from the teacher's conception of flexibility and the aspects of it that have become important to him.

The following objectives have been selected because they appear to be at the heart of the interactive process:

1. To discriminate cues from learners. That is, the teacher candidate will be able to scrutinize words and gestures and attempt to interpret them. Three aspects of interpretation will be concentrated on:

A. Cognitive orientation of the learner.

B. Effective orientation of the learner as it pertains to the lesson.

C. Skills and competence as they pertain to a teaching objective

2. To experiment with teaching behavior during encounters so as to accommodate the emerging picture of cognitive orientation, effective orientation, and skill and competency level as these relate to the purposes of the encounters or lessons.

3. To experiment with teaching maneuvers designed to increase knowledge about the learner. (This behavioral objective is correlated with the first level of activity in the teaching strategies sub-component in which teacher-candidates learn several basic teaching maneuvers and try them out with groups of children.)

Evidence of Behavioral Changes in Relations to the Objectives

It is recommended that evidence be collected in terms of the roleplaying simulations because standardization under simulationed conditions is much greater than it is under classroom conditions. In classroom situations, all sorts of events can occur which are good and sufficient reason for the teacher to mute his sensitivity temporarily. (A fire drill is a good example of an activity which can interrupt a lesson unexpectedly and cause a suspension of teaching behavior.) Hence, it is not easy to determine, amidst the random events of a classroom, which situational events cause teacher behavior and when he is able to control his own responses. The assumption can be made also that a teacher who can read the frame of reference of a single learner in a tutorial situation is prepared to try to do the same in emcounters with varying sized groups of children. A teacher who is not flexible even in a tutorial situation with a role player would be extremely unlikely to be sensitive in any other kind of setting, although the possibility must be admitted.

Therefore, we will say that a learner has achieved objective One-A when, in a tutorial situation involving a role player as a learner where the role player is trained to a cognitive orientation that conflicts with a concept that is being taught, the teacher is able to discriminate the cues from the role player-learner, and is able to discriminate the potential conflict between the cognitive orientation and the concept to be taught. Objective One-B can be said to have been achieved when, in a role player tutorial situation in which the role player has been trained to affective orientation that conflicts with the objective of the lesson, the teacher is able to discriminate the cues, make the interpretation about the affective orientation and discriminate the conflict between the hypothesized orientation and the objectives of the lesson. Objective One-C can be said to be accomplished when the teacher in the same kind of situation described above is able to discriminate cues about the skill and competency level of the learner, make hypotheses about the level, and make a judgment about the match or a conflict between that level and the objectives of the lesson.

Objective 2 can be said to be achieved when the teacher in the situations described under 1-A, 1-B, and 1-C, above also modifies his approach to the learner in such a way as to increase the likelihood of building a bridge between the learner's orientation or competence and the objectives of the lesson. Objective 3 can be said to be achieved when the teacher, working with small groups of children, is able to manifest teaching maneuvers that probe the frame of reference of a learner in relation to the objectives of the lesson.

These objectives can be further analyzed so that levels of competence can be distinguished for each one of them. As we proceed to describe the means of the component it will become apparent how to do this operationally but the actual breakdown will not be made but will be left to the faculty who implement the program and their students.

The Rationale for the Component

This component shares with all of the others the general democratic rationale for the entire program. (Teacher-candidates should participate in the shaping of their education. They are organized into groups which organize procedures and administer their own education with the advice and assistance of faculty members and support system personnel.) It also shares the general rationale that a differential training procedure should be instituted in the context of the democratic process so that the training procedures are modified according to the cognitive orientations, value preferences, feedback preferences and competency levels of the students. (See Chapter Six "The Differential Training Model" for explanation.) Differential training in terms of competency level and feedback preference are easy to accomplish through the democratic process. Candidates will be judging their own performance with the assistance of faculty so the faculty counselor can easily adjust procedures so that each person is working at his competency level. Also, the faculty counselor can vary his contribution to feedback depending on the candidates' need for external authority in judging his own performance. Faculty can also vary the structure they provide to accommodate the cognitive orientation of the teacher candidates. Value preferences can be accommodated by helping candidates focus on tasks that are congruent with the value structure.

In addition to the general program rationale the flexibility training component has its own specific rationale. This has been developed on research conducted by Dirr, Joyce, Hunt, and O'Donnell. The early segments of this work are described in the paper entitled "Sensitivity Training for Teachers, and Exploratory Study", by Joyce, Dirr and Hunt. The paper follows the description of the component. It reports a study in which Dirr and Joyce conducted a sensitivity training program which combined a relatively short "discrimination-training" phase with a relatively long "practice and feedback" phase. The discrimination training was carried on by presenting the trainees with several sets of transcripts of tape recordings of other individuals undergoing communications tasks. Practice was then given in identifying learner cues and the kinds of adjustments which were made by the teachers to the frames of reference of the learners. In the "practice and feedback" phases the trainees engaged in communication tasks in which children were trained to play the roles that were required. Films and tape recordings were made of each trainee's performance and the performance was fed back to the trainee with the assistance of the faculty.

The results indicated that a major difficulty of the training program was in the discrimination phase. The student teachers seemed to have great difficulty discriminating the learner cues and interpreting them meaningfully. They also appeared to confuse adaption to a learner (flexibility) with building rapport with him. Many of them concentrated on developing techniques for establishing rapport with the learner rather than building conceptual links between themselves and the learner. Because of the experiments by Joyce, Dirr and Hunt and because of subsequent experience in the Teachers College teacher education program (O'Donnell and Joyce) we have come to feel that the component should include much more specific training for discriminating learner cues and much more specific training for discriminating ways of responding to learner cues. This phase of the training has been extended accordingly. The "practice and feedback" phase has been modified also to include clusters of tasks in which various aspects of the learner are under consideration. For example, one cluster deals with cognitive orientation, another with affective orientation and a third with his skills or his competency level. This procedure enables the teacher trainees to focus on one aspect of the learner at a time until they are thoroughly comfortable with that aspect. After they have explored several aspects of the learner, tasks can be used which are more complex and focus on several sides of the learner at once.

The format, however, of using the simulated teaching situations in the early stages has been retained because it focuses attention so totally on the learner and on the process of modulating a teaching strategy so that it reaches the learner. The format of taping, filming or video-taping the role-playing sessions and using immediate feed-back has been retained. Tasks have been added so that the candidates can play the roles themselves in addition to working with children. Provision has also been made for the extension of the training technique into tutorial situations and small group situations with pupils who are not role players, so that candidates learn to apply those skills when teaching "real" people. The rationale continues that feedback is essential to the learning of complex tasks and that teachers can learn to examine reproductions of their own behavior, set goals themselves, and monitor their own behavior so long as the structure is provided to help them organize themselves. The program has also been extended to apply the techniques to a teaching strategy. The candidates practice the "differential training model" from the Teaching Strategies Component which requires, for its execution, the discriminations of cognitive orientation of the learner and the adjustment of the teaching strategy to fit the cognitive orientation. This part of the training insures that the flexibility training will be firmly linked to the training in teaching strategies and transported into a realistic educational decision-making situation. (One where the teacher candidate proceeds through all of thesteps, from making a prescription for a learner, through executing the prescription with a teaching strategy, and finally modifying it as data about the learner is received in the course of the lesson.)

The Means of the Component

In the case of this component the means flow rather directly from the rationale. The activities take place in the following steps:

Phase 1. Initial role playing encounters.

The component begins with all candidates teaching in several communication tasks. They observe each other and are introduced to the problem of sensitivity. An especially good initial technique is for each member of the inquiry group to undergo the same communication task, (with one of the members trained to be the role player.) Each episode is recorded and then the entire group looks at the television tapes of all members and they try to analyze the behavior of the role-player and modify their teaching strategies. In the analysis that follows teacher-candidates should offer and discuss hypotheses which would account for the behavior of the role-player and discuss various ways of modifying teaching behavior to accommodate the frame of reference of the simulated learner.

Phase 2. Establishment of learning tasks.

In this phase the component should be described to the candidates. A modified and expanded version of this document itself can be presented to the students with its descriptions of the basic problems of sensitivity, the previous experience with the component, the goals of the component, the rationale, and this section on means. The specific role-playing tasks which occur later in this section, however, should be withheld from the candidates in order "not to give away the game" of role-players. In other words, if the candidates know ahead of time the role that is going to be played by a particular role-player, then the task of diagnosing the learner has been forestalled. With this exception students should examine the entire program, look at the particular purpose of each phase and work out a way of administering the component to themselves. As will be seen there are many provisions for latitude within the phases of the component that are specified and it is certainly not beyond the limits of reason that some groups of students will invent far more powerful components (at least for themselves) than the ones that we have specified here.

Phase 3. Awareness training.

The phase is designed to achieve readiness with relation to the major first objective by bringing the candidates to the point where they are aware that every element of a student's behavior can be read for significance. We want him to know that every thing a learner does is a potential clue to his cognitive or affective orientation or his skills or competence level. The method of this phase has been developed by Ruth Formanek, Professor of Educational Psychology at Hofstra University who adapted procedures originally developed by Robert Spaulding of Duke University. The activities consist of observing children using an observation scheme in terms of "coping." The complete manual is available from Formanek at Hofstra[1] At first video taped or filmed samples of students behavior might be observed. Then in teams of two, the candidates proceed into classrooms where they observe children together. Each observer concentrates on one child. Preferably, both concentrate on the same child. They practice until they have reliability. Then, the entire inquiry group studies children of their observations. The faculty counselor will be needed for this activity.

Phase 4. Discrimination training, goal setting, practice and feedback

This phase is the heart of the training program. It has three sub-phases. The first phase deals with cognitive orientation, the second with affective orientation and the third with skills or competence level.

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[1] Ruth Formanek. "Course Outline and Workbook for Elementary Education 105." Department of Elementary Education, Hofstra University, 1966.

Phase 4a.- A: Discrimination training, goal setting, practice and feedback:

In this phase the goals are:
to discriminate learners to different cognitive orientation and to practice modifying the teaching strategy to accommodate to the cognitive orientation of the learner.

Several role playing tasks are provided in which the learner manifests a particular cognitive orientation. The cognitive orientations have been taken from Harold M. Schroder, et.al., Human Information Processing (New York: Holt, Rinehart, and Winson, 1967) which discriminates four levels of cognitive complexity. These levels are manifested in terms of unilaterality and interdependence in interpersonal relations.

The cognitive levels can be described as follows:

I. This stage is characterized by extremely fixed patterns of response. The individual tends to see things evaluatively, that is, in terms of rights and wrongs, and he tends to categorize the world in terms of stereotypes. He prefers unilateral social relationships, that is, those which are hierarchical and in which some people are on top and others on the bottom. He tends to reject information which does not fit in with his present belief system or to distort the information in order to store it in his existing categories.

II. In this stage the individual is characterized by a breaking away from the rigid rules and beliefs which characterized his former stage. He is in a state of active resistance to authority and tends to resist control from all sources, even non-authoritative ones. He still tends to dichotomize the environment. He had difficulty seeing the points of view of others, and difficulty in maintaining a balance between task orientation and inter-personal relations.

III. At this stage, the individual is beginning to re-establish easy ties with other people, beginning to take on the point of view of the other, and in his new-found relationships with other people has some difficulty maintaining a task orientation because of his concern with the development of inter-personal relations. He is, however, beginning to balance alternatives and to build concepts which bridge differing points of view and ideas which apparently contradict each other.

IV. The individual is able to maintain a balanced perspective with respect to task orientation and the maintenance ofinter-personal relations. He can build new constructs and beliefs, or belief systems, as these are necessary in order to accommodate to changing situations and new information. In addition, he is able to negotiate with the others the rules or conventions that will govern behavior under certain situations, and can work with others to set out programs of action and to negotiate with them conceptual systems for approaching abstract problems.

For a more thorough description the reader (and the teacher candidate) should read Schroder, (cited above), Sullivan's paper, which appears as the Appendix to the Teacher-Scholar Component, and the Differential Training Model in the Appendix to the Teaching Strategies Component.

Those papers describe cognitive orientation from an information-processing point of view and provide a theoretical framework within which to discriminate levels and types of cognitive orientation. The candidates should then engage in the first communication tasks. It is recommended that each candidate undergo the same Communication Tasks so that they will have a common body of experience. Also, they then analyze the learner cues collectively and discuss the alternative ways that they attempted to accommodate to the learner's orientations. The materials for a sample task follow. The task is called the "composition-correction task."

Composition Correction Task

Description of the Task

(This is given to the teacher candidate.)

Bob is seventeen years old and in the 11th grade. Your task' today will be to correct the attached composition which he has written.

During the next half hour you are to correct the grammar, punctuation, and thematic development of the composition. At the end of that time, you will be called to review the paper with Bob.

Why The World's Fair Promoted World Friendship

When I went to the World's Fair last year I noticed that everyone whom worked at each of the pavilions were friendly to everyone else. The people at the Japanese Pavilion were friendly with the people from the Indian Pavilion and the people from the United States Pavilion were friendly with the people in the Russian Pavilion. I was surprized by the fact that when I was in the United States Pavilion I saw a lot of people from other countries dressed in their native clothing having a good time and being friendly to everyone else.

After I had been there for a couple of hours I noticed a bunch of people standing near the front gate. They were picketing against the World's Fair for some reason; I guess it was because they were from the Pakistan Pavilion protesting the mural in the Israel Pavilion; and then there were some people picketing from CORE, protesting that the World's Fair people were discriminating against Negroes.

On the subway on the way to the train station I looked back at the Fair and thought how much it promoted World friendship and peace.

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Cues For the Learner
(This is given to the Role Player)

The learner has low cognitive complexity. To him rules are fixed and rigid. Interpersonal relations tend to be the same. Authority figures are important to him and he attempts to guide his behavior by appealing to authority. When authorities conflict he is in a quandary. He hopes that a teacher will provide him with clear and specific rules and that he will not be asked to develop guidelines of his own. In order to manifest this cognitive orientation do the following four things:

1. Use the authority of previous teachers in defending your use of words, tenses, punctuation, etc.

2. Then agree with all the corrections the teacher might make.

3. Try to put the teacher in the position of assuring you that a rule is inflexible and applies all the time.

4. Then set the teacher up as your new authority figure.

Name______________________ Composition Correction

POST-QUESTIONNAIRE FOR THE TEACHER

1. Describe briefly how you planned to go about the task.

2. To what extent did you follow your initial plan? If you did not, Why?

3. What were your impressions of the student? Of his personality?

4. What were your impressions of the student's work?

5. How did he react to your corrections?

6. Did his reactions influence your presentation?

7. What did you accomplish by reviewing the corrections with the student?

8. Were there any obstacles to the success of this task? If so, how did you attempt to overcome them?

9. If you had it to do over, would you make any changes in your presentation?

RATING FORM COMPOSITION CORRECTION WITH 17 YEAR OLD

NAME ______________________________ RATER ________________________

1 = no effort apparent

5 = high level of activity

I. Initial Phase

A. Establishes Rapport

1 2 3 4 5

B. Learns about the Learner

1 2 3 4 5

C. Leads in to the Lesson

1 2 3 4 5

II. Response to Cues - Sensitivity Ratings

A. Use of authority figures for defense

1 2 3 4 5

B. Student agrees with everything

1 2 3 4 5

C. Student seeks inflexible rules

1 2 3 4 5

D. Sets teacher up as new authority figure

1 2 3 4 5

1 = does not acknowledge that learner has spoken.

2 = acknowledges learner, does not probe.

3 = acknowledges learner and probes.

4 = acknowledges learner, probes, and modifies strategy with relation to subject matter.

5 = modifies strategy with relation to cognitive orientation itself as well as subject matter.

The first four pages in the description of the Composition Task are simply a short description of the task and a copy of the composition which is to be corrected. The fifth page describes the learner. This material is used to train the role player so that he will manifest the appropriate cognitive orientation. It is written for an adult role player. The next page provides the questionnaire which is given to the teacher at the end of the experience and is simply an open ended device which gets the teacher to set down in writing the thoughts that he had about the learner and the process of the lesson. The last page includes the rating sheet which each one of the observers is to use in order to determine whether the teacher manifested sensitivity with respect to learner cues and began to build bridges to the learner. The rating form provides a gauge to steps in sensitivity. Ratings are made after each cue. The rating of "one", for example, indicated that the teacher does not acknowledge that the learner has spoken. In a sense the teacher is ignoring whatever it is the student has to say. The rating of "two" indicated that the teacher has acknowledged that the learner has spoken but that he does not ask a question or otherwise probe in order to find out for sure what is the meaning of the learner's words. The rating of "three" indicates that the teacher both acknowledges the learner and probes to try and find out what is going on in the learner's mind. The rating of "four" indicates that the teacher not only acknowledges the learner and probes but he is beginning to modify his strategy. That is, his approach to the task at hand (in this case the correction of the composition) is changing. The rating of "five" indicates that he is not only changing his strategy in relation to the subject matter but he is including attention to the cognitive orientation of the learner.

A teacher candidate should persist in each sub-phase until he can regularly operate with ratings of "four" and "five." When he does, we can say he has achieved the critical behavioral objectives. This can take some time. Many teachers are quite puzzled as they find that the learner's response has to be interpreted not only in terms of the task at hand but also because it has significance for his cognitive level. For example, a teacher may say to the learner in the composition correction task that there is an inconsistency between his statement that every one was friendly to everyone else and his statement that some of the people are picketing because they are angry at another group.

When the learner responds in his turn by saying "I was always taught to use just one idea in each paragraph, "it surprises many teachers to realize that the learner may not simply be trying to follow a rule which is inappropriate in the present setting, but may be rigid about following rules in general and really be upset when authorities conflict. Also, a good many teachers have great difficulty learning to probe for information in the actual course of the lesson. Even after learning to probe and beginning to get the feel of the learner, shifting strategy is very difficult for many.

Thus, concentration on identifying the cognitive orientation of learners should continue until the teacher candidate consistently achieves the rating of "four" and "five" in relation to clusters of learner cues. Some will reach this level fairly quickly while others will be quite slow about it. Some groups of candidates will prefer to work together even though their progress is uneven. Those who achieve quicker may play the role of coaches and role players and operate the audio and video recording devices. Other inquiry groups will prefer to operate in a more individualistic framework where the candidates work in pairs or small groups. (Some learners, of course, need a great deal of structure. The faculty counselor applies the principles of the differential training model when this is the case just as he provides very little structure when the students are capable of developing their own organization.)

In phase Four-B the training continues as in the case of four, but the concentration is on affective reactions by the learners. In order to prepare for the clinical work in this phase the learner should read: Carl Rogers. Client-Centered Therapy (Boston:Houghton Mifflin, 1951). They should also familiarize themselves with the teaching strategies oriented around the self and the one oriented around non-directive teaching which were derived from the work of Maslow and Rogers respectively and are described in the Appendix of the Teaching Strategies sub-component. In phase four-B the communication tasks involve role players who have a value preference that creates some difficulty in the lesson. For example, the poetry task which is described in the next few pages involves an affective orientation by a student that has to be bridged in order to successfully complete the lesson. The learner refuses to take the narrowly analytic approach to the poem but persists in interpreting it romantically according to his day dreams. There is nothing unintelligent about this learner, but she does not like the idea that the poem is about a snake. She really prefers the idea that the poem is about a knight in shining armor coming to visit her or , perhaps, about Halloween ghosts. Her attitude is "why not leave it at that?" "Snakes are rather revolting, after all, and isn't poetry supposed to be a pleasant diversion?"

In order to have success in the task the teacher has to figure out that this learner is a romantic and try to build a strategy that will enable the learner to see the difference between her point of view toward poetry and the point of view that underlies the lesson.

The Poetry Task

DESCRIPTION OF TASK
(For the teacher.)

Cynthia is an 11 year old in your 6th grade class. You have recognized her high abilities and have managed to allot time to tutor her on an individual basis in English.

Poetry has always been one of Cynthia's favorite subjects. Your purpose in teaching her this poem today is to demonstrate that a poem means something. It says something. Your purpose is not to make the student like the poem -- but rather to see that she can understand it. A good understanding involves more than figuring out the riddle -- but your student should figure it out for herself. Frame questions that will allow the student to speculate about the poet's choice of words -- "narrow fellow," "his notice," "spotted shaft," "boggy acre,""transport of cordiality,""attended or alone," "tighter breathing," etc. Do not answer your own questions -- although you may have to explain some words and point out that two meanings can apply. Do not encourage the student to exaggerate or make fanciful interpretations. You want her to make sense of what is written on the page. Ask her what kind of a person would write about a snake as this person does. Have the student back up any opinions and assertions by referring to the poem.

You have approximately one half hour to prepare the lesson. You may use any of the materials in the Education Laboratories to assist you in your presentation.

THE POEM

A narrow fellow in the grass
Occasionally rides;
You may have met him, - did you not?
His notice sudden is

The grass divides as with a comb,
A spotted shaft is seen;
And then it closes at your feet
And opens further on.

He likes a boggy acre,
A floor too cool for corn,
Yet when a child, and barefoot,
I more than once, at morn,

Have passed, I thought, a whip-lash
Unbraiding in the sun, -
When, stooping to secure it,
It wrinkled, and was gone.

Several of nature's people
I know, and they know me;
I feel for them a transport
Of cordiality;

But never met this fellow,
Attended or alone,
Without a tighter breathing,
And zero at the bone.

POST-QUESTIONNAIRE FOR THE TEACHER

1. Describe briefly how you planned to present this lesson to the learner.

2. To what extent did you follow your initial plan? If you did not, why?

3. What were your impressions of the student?

4. How did what Cynthia said influence your presentation?

5. Describe her initial impression of the poem.

6. Did you try to change this impression? Did you succeed?

7. Were there any obstacles to the success of the lesson?

CUES FOR THE LEARNER

1. You love poetry, but not to really think about it. You accept the first impression that comes into your mind and day dream from thereon, forcing the poem to conform to your first impression.

2. Take the first stanza and picture a tall, slim knight in armor riding through the fields coming to visit you.

3. Continue this through stanza two, then stop reading the poem and continue your day dream.

4. As you get further on, claim that it sounds like a poem about halloween ghosts to you, except you don't think it takes place in the night.

RATING FORM

I. Initial Phase (1 = Lo; 5= Hi)

A. Establishes Rapport

1 2 3 4 5

B. Learns about the Learner

1 2 3 4 5

C. Leads into the Lesson

1 2 3 4 5

II. Response to Cues (1 = Insensitive; 2 = Sensitive, no adjustment; 3 = adjustment unsuccessful; 4 = Successful adjustment, no feedback; 5 = Feedback sought)

A. Poem about the Wind

1 2 3 4 5

B. Poem about a Night

1 2 3 4 5

C. Poem about Halloween

1 2 3 4 5

D. Refusal to refer to the Poem

1 2 3 4 5

DIRECTIONS TO THE RATER

Your rating form is divided into three parts, each part using a 5 point rating scale: 1-low, not achieved at all; 5-high, achieved very well.

Part I concerns the Initial Phase of the lesson, the one in which the working relationship between teacher and student is established. This is an extremely important phase since it provides the foundation for the lesson. For instance, if a teacher does not attempt to learn about the learner in the initial phase, she is teaching the lesson to a figment of her imagination.

Part II concerns the cues that will be given by the learner during the lesson. These are standard reactions or attitudes that will be expressed as the opportunity presents itself. Using these as criteria, we attempt to determine if the teacher understands the pupil's mental framework and can adapt her lesson to it. A rating of 1 in this area indicates that the teacher did not detect the cue. A rating of 5 indicates that she detected the cue, modulated accordingly, and sought more feedback from the learner after her modulation.

Part III concerns the general quality of the overall presentation as evidenced by specific characteristics. It is feasible that a lesson be very clear, but the language level might be inappropriate.

In recording your ratings, please be mindful of the nature of a 5 point scale. Unless the entire range is utilized the value of the score is minimum.

Some of the other tasks in phase Four-B involve attitudes toward the self. Sometimes the learner lacks confidence and sometimes he is overconfident in relation to a learning task. In other cases a political or social belief of the learner causes a negative reaction to the subject matter of the lesson.

As in the preceeding phase the candidates should persist until they consistently receive ratings of "four" and "five", indicating that they can identify the learners affective orientation and modify their strategy to meet it. The remarks about individual differences and the different styles of groups which were made in relation to Phase-4-A apply also to 4-B.

Phase 4-C

This phase proceeds as before except that the learner's problems have to do with their level of skill or competence in relation to the task at hand. (For example, the teacher may be assigned to teach a skill in arithmetic. In the course of the lesson the learner reveals that he really has not mastered some of the operations in arithmetic that should occur prior to the mastery of the objectives that is at hand.) In order to prepare for the clinical activities of this phase the students should be familiar with the cognitively-oriented teaching strategies from the Teaching Strategies Sub-component (induction, concept attainment, advance organizer, inquiry training.) The candidates should persist in this phase until they consistently are able to be flexible as we have defined it and receive ratings of "four" and "five" in the task.

Phase 5. The tutorial and small group phase.

At this point the candidates should carry this type of analysis into their tutorial and small group teaching, and should begin to practice what they have learned. When they teach arithmetic lessons, for example, they should look at the cognitive and affective orientations of their learners and their skill and experience levels. It is a good idea for the inquiry group to have several meetings built around lessons taught and recorded by their members where all participate in the task of trying to identify the critical aspects of the learner and speculate on the appropriate ways of modifying teaching strategies. The feedback groups also should engage in this kind of activity, which should continue until each member is consistently able to organize cues from the learners into hypotheses about their cognitive and affective orientations and competence levels and is able to match his teaching strategy to the state of the learner.

Phase Six. Practice with the Differential Training Models.

The Teaching Strategies sub-component includes a differential training model which requires modulation to the cognitive orientation of the learner.

This model should be mastered at this point, and the following procedure is recommended: Each feedback group should apply the model to a group of learners equal to their number. One candidate should be assigned to each learner. He should make a diagnosis of his learner and plan a lesson which is appropriate in terms of the model. The other members should hear the diagnosis, observe the lesson, and discuss the adequacy of the diagnosis. The procedure should be repeated several times.

The sixth phase concludes the pre-service training program. For in-service work, phases four and five should be used.

The Support Systems That Are Required

The program depends, of course, on a set of tasks. Ideally, after using the tasks that are provided, the students in the program will begin to make up their own. They will define cognitive and affective orientation, skill levels, and so on and train children or themselves to play the appropriate roles in relation to teaching tasks.

Role players are also desirable. It has been our practice to pay a few children to provide this service and we have discovered that children down to about age eight can be trained satisfactorily to play clear and simple roles. Below that age it is very difficult for a youngster to play anything but the most obvious role and obvious roles are not particularly useful in the flexibility training. Also, it is useful to have a couple of adults, either undergraduate or graduate students or local residents, who can work as professional role players. In the program at Teachers College during the 1967-68 school year one young lady worked in this capacity and was able to enhance this type of activity greatly because she became skilled at taking a wide variety of roles with minimum instructions. The fact that the students taught her many times seemed to enhance rather than diminish her effectiveness since she could shift roles so easily.

Portable audio tape recorders are of course indispensible and the portable video tape recorders are also extremely useful. These media are probably better for flexibility training than is film because of the immediate feedback possibilities. There is almost always some question about what particular teachers or learners said or did and the video and audio recordings are a quick and exacting way of finding out. As usual, of course, students should operate audio and video equipment with technicians helping only when absolutely necessary.

An initial supply of tasks is available at Teachers College, Columbia. It is recommended, however, that each local faculty and, even better, each group of students create their own tasks using ours only as models. The creation of tasks is in itself an invaluable experience. While we don't know the exact effects of doing it we are fairly certain it adds substantially to the learning that goes on.

The Administration of the Component

Most of the details of administration have been embedded in the section on means. The basic unit is the inquiry group which is made up of several feedback groups. Faculties may prefer to have the faculty counselor stay with his "home" inquiry group throughout this components including this component or faculty may wish to specialize in flexibility training. As usual, however, the program should be administered by the students. The one unusual feature was described earlier. Whereas in most of the components the students can be oriented to all aspects of training devices, in the case of this component the specific descriptions of the sensitivity tasks themselves have to be withheld until the point when the student is ready to learn a role or is given the instructions for the task. It is not that the tasks depend on surprise, but simply because there is no task when the orientation of the learner is known beforehand.

Evaluation

The evaluation is embedded in the sensitivity tasks. In addition to the ones provided in the course of the training program and the initial role playing encounters, tasks should be provided throughout the internship or intern experience to provide the student and the teacher with an opportunity to examine his competence. This can be done privately or with an inquiry or feedback group depending on the preferences of faculty and students.

Research

Research should especially concentrate on the development of more effective training modes. The amount of awareness training that is necessary, the amount of modeling which is desirable, the transfer ability of sensitivity to new learner domains should be undertaken. A detailed description is given in Chapter Eighteen.

Appendix: Chapter Ten-C

Flexibility Training for Teachers

by Bruce Joyce, Peter Dirr and David Hunt

This paper reports the first of a set of investigations designed to develop a training program to increase the sensitivity of a teacher to the frame of reference of the learner. This first investigation examines the effects of such a program and, as an adjunct to the central study, a comparison was also made of the communication styles of teachers under simulated conditions and in the normal classroom situation.

The experiment was made possible because of the invention in the spring of 1965[1] of a method for assessing the interpersonal sensitivity and flexibility of a teacher who is interacting with a learner through a series of communication tasks. In the communication task, the teacher was presented with the problem of teaching a concept to a learner. He was given time to prepare a lesson dealing with the concept, and then allowed a period of fifteen minutes in which to teach the concept to a learner who was actually a role player trained to respond in a constant fashion which would indicate a frame of reference counter to the one implied by the concept. In other words, a situation of conflict is created in which the concept which is the object of the lesson is mildly but firmly rejected by the learner. For example, in one of the tasks the concept of checks and balances in the federal government is to be taught to a Venezuelan immigrant who is applying for United States citizenship. After the teacher has completed an explanation of the parts of the government that interact and check and balance one another, the role player responds, "Now the President is the boss, isn't he? He tells these other people what to do." He continues throughout the lesson to maintain the idea that the President is a kind of big boss who has unilateral authority over other citizens and members of the government. A little later on in the lesson, the role player compares the judges to priests who "tell us what's right and what's wrong." Still later, he speaks of the different elements of the government "ganging up to stop these other guys." And he cannot seem to understand why anyone would want the inefficiency of all these bosses when he says, "Say, when they elect this president, why don't they just let him do the whole job? The way you guys do it, it must take an awful long time to get anything done."

As the role player provides each verbal obstacle to the teacher, observers rate the teacher's response, looking for his recognition of the frame of reference of the learner and whether or not he modifies his strategy in order to build a conceptual bridge around the learner's concept and the one he is trying to teach, to bring them together. Hence, sensitivity is defined as the recognition of the learner's frame of reference and subsequent adjustment of teaching behaviour in an attempt to accomodate the learner's stance. We find some teacher's who grasp the problems and begin to develop teaching strategy to build a conceptual bridge between the student and the concept. One teacher, for example, who had been giving a verbal presentation of the concept of checks and balances shifted to an analogy of a restaurant and approached the concept in concrete terms: "Well George, you work in a restaurant, don't you? And there is a boss there, right? And this boss tells the workers what to do, right? Now suppose the boss prepares food that some customer doesn't like; what are some of the things that customer can do? . . ." And so on went that teacher, trying a fresh way of illustrating. Yet other teachers continued their presentation as if the role player had not spoken, entirely failing to recognize that he was not grasping the concept and, in fact, had a conflicting concept of his own: "George, I wish you'd stop interrupting me. Now instead of raising all these questions, suppose you repeat after me what I've just told you about the functions of the judiciary."

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[1] David E. Hunt. The Communication Task, unpublished manuscript, Syracuse University, 1965.

Hunt and his associates used the communication task as part of an assessment of Peace Corps trainees in the spring of 1965 and found that performance on it was related to measures of flexibility in personality, with the more flexible personalities manifesting greater flexibility within the communication task. The task was also found to be internally consistent and it was possible to make reliable ratings of the sensitivity-flexibility dimension.[2]

The Sensitivity Training Program

Because of the finding in independent work of both Joyce and Hunt that many pre-service teachers displayed very little sensitivity during the communications task, Dirr and Joyce decided to develop a program of training designed specifically to teach teacher trainees:

(1) To discriminate cues from learners. That is, to scrutinize utterances by learners and attempt to interpret them.

(2) To try to alter teaching behaviour during lessons so as to accomodate the emerging frames of reference of the learners.

(3) To reflect this in their classroom teaching by asking more probing questions designed to reveal the frame of reference of the learner.

The training program had the following phases:

[2] David E. Hunt, op. cit.

(1) Discrimination training: The trainees were presented with several sets of transcripts of tape-recorded episodes of other persons undergoing the communication task. Practice was given in identifying learner cues, in terms of the frame of reference involved, and in analyzing the response of the other teachers to the frames of reference. Examples of sensitive and insensitive behaviour were included in an effort to teach the trainees to discriminate between those two classifications of teacher response.

(2) Practice and feedback: In the next phase, each trainee engaged in four communication tasks. Each one was tape-recorded or filmed so that shortly after the task, the tape-recording or film could be shown to the trainee in order to improve his discriminative capacity and his own response or failure to respond to the cues or to interpret them. The role players were children who were trained to play the specific roles required. The children's ages were 9 to 12 and the teaching tasks were of a kind that are familiar in school settings. One task, for example, required the teacher to correct the grammar in a written essay which had been prepared presumably by the role player. (The role player was trained to appeal to authority to defend his position.) Another task required a discussion of interdependence of foreign relations. (The role player was trained to reflect a concept of national autonomy and protectionism.) A third task required the teaching of the use of metaphor in a poem. (The role player was trained to make incorrect inferences from the metaphors.)

Design

The subjects were twenty-four students in the Master of Arts in Teaching program at a small girls liberal arts college.

The central questions which were explored were: Did the training program result in an increase of "sensitivity" within the communication tasks that were part of the training program? Did the training program increase the proportion of questions that the trainees asked during classroom teaching in the public schools? Was the teaching behaviour of the trainees under simulated conditions similar to behaviour in "normal" public school classrooms.

Since the second question is most relevant for teacher education, an attempt was made to maximize evidence on that question by forming an experimental and control group in the following fashion: A communication task was administered to all twenty-four subjects and ratings of sensitivity were obtained. In addition, recordings of three teaching episodes in normal public school classrooms were obtained. These were analyzed according to a system devised by Joyce[3] to yield indices of question-asking in teaching. Twelve matched pairs of trainees were then formed, according to sensitivity scores and indices of questioning. The members of each part were then randomly assigned to either the experimental or the control group.

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[3] Bruce R. Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967).

The experimental group was then submitted to the sensitivity training program. Ratings of sensitivity were obtained from each communication task during the training program. At the conclusion of the program recordings of three more episodes of classroom teaching were obtained from all subjects which served as the basis for scoring the indices of questioning behaviour.

Results

1. Did the training program result in an increase of "sensitivity" within the communication tasks that were part of the training program? Two scores were obtained by rating behaviour within each task; an overall rating of sensitivity and a rating of rapport-building activity -- probing and conciliatory behaviour not directly related to the teaching task. Table 1 presents the results of these two scores for the first two tasks compared with the last two tasks during the training program. It can be seen that there was no significant change in the ratings of sensitivity but there was a statistically significant increase in rapport-building.

Table 1
Sensitivity and Rapport Building
During the Early and Later
Communication Tasks in
the Sensitivity Training Program

	Mean	S. D.	t	p
Sensitivity				
Pre	2.71	1.46	1.06	.35
Post	3.02	1.28		
Rapport-Building				
Pre	1.75	1.1	4.35	.01
Post	3.05	1.35		

It may be that it is easier for a teacher to learn to probe generally into the learner's background than it is for him to learn to probe specifically into the learner's frame of reference and adjust teaching tactics accordingly.

When individual differences are examined, the data suggest differential effects. Five of the subjects actually dropped insensitivity, while seven scores rose markedly. Apparently the development of a sensitivity training program will require research on which differential training model can be built.

Considering the results as a whole, it is necessary to conclude the program did not achieve its main goal with the group of subjects, but that it may have achieved a related goal (rapport-building) which may be a precursor of sensitivity. The apparent differential effectiveness of the program suggests that future research include attention to the development of differential procedures.

Table 2

Comparison of Means of Experimental and Control Groups Before and After the Training Program: Indices of Questioning and Sanctioning

Sanctions	Pre-Training		Post-Training		Mean Diffs.	t	p
	Mean	S D	Mean	S D			
Experimental Group	6.51	3.84	6.70	3.61	.19	.21	NS
Control Group	5.81	2.91	5.32	3.10	-.49	.27	NS
Questioning							
					Diff. (.68)		
Experimental Group	11.32	5.62	11.21	5.46	-.11	.14	NS
Control Group	11.71	6.01	10.34	6.12	-1.37	1.61	NS
					Diff. (1.28)		

2. Did the program affect the proportion of questions asked by the trainees during teaching episodes in normal public school classrooms?

For both experimental and control subjects, three teaching episodes were recorded before and after the training program, and an index was made of the number of questions which were asked divided by the total number of all communications related to subject matter. An index was also made of the proportion of communications judged to be rewarding to the learner (positive sanctions). Table 2 presents these data as a comparison of means of experimental and control

5

groups before and after training.

With respect to sanctioning, the experimental groups changed almost none, whereas the control group dropped until the differences between the groups reached significance. However, when the differences are adjusted to account for initial differences, the change is not significant.

In questioning, the same trend appeared, although the differences between control and experimental group did not reach significance. The direction of the differences between control and experimental group is similar to those obtained several times when the application of interaction analysis has stemmed the flow toward directness in teaching rather than achieving a positive result.[4]

It is necessary to conclude that the sensitivity training program did not increase questioning or positive sanctioning by the subjects, both of which are categories of classroom behaviour which might be expected to accompany increases in sensitivity.

3. Was the teaching behaviour of the trainees under simulated conditions similar to their behaviour in "normal" public school situations? This question was explored because any attempts to build training programs that utilize simulation need to face the problem of transfer to the "real" environment of application.

It will be recalled that three teaching episodes in public school classrooms were recorded and analyzed for each subject before and after the training program. In addition, the four communication tasks of each subject were analyzed using the same procedure. Computation of indices enables a comparison of behaviour in the two types of situation. The following indices were compared:

a. Sanctioning. defined as the proportion of all teacher communications judged to have positive reward value compared to all other communications.

b. Informational Communications. defined as the proportion of all teacher communications that handled subject matter.

c. Informational Questioning. defined as the proportion of questions compared to other informational communications.

d. Open Questioning. defined as open-ended questions compared to all informational communications.

e. Procedural Communications. defined as the proportion of communications which organize procedures compared to all other communications.

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[4] See, for example, Jeffrey Kirk.

The focus of the analysis is to determine the kinds of unexpected differences that occur, that is, those not easily accounted for by changes in the kind of tasks in the simulation as compared to the ordinary classroom task, but which are a product of the environmental change.

The indices are looked at in two ways, as a comparison of means between the two situations (i.e.: do teachers reward as much under simulated conditions as they do in classroom) and as a matter of correlation (i.e.: what is the relation between rewardingness in the two situations-- do the high-rewarding teachers in one situation do so in the other condition).

Table 3 presents the results for the index of sanctions.

Table 3

Index of Positive Sanctioning in Simulated and Classroom Situations

	Mean	S.D.	Mean Diff.	t (p.)	r (p.)
Classroom Teaching	18.6	7.12	4.6	7.33 (.025)	.63 (.05)
Communication Tasks	14.0	6.14			

We would expect that teachers would reward a role player less than a classroom full of children; so they did. The amount of rewarding communication directed at the role players was, it seemed to us, remarkably high, however (14% of all communications). Apparently the communication tasks were sufficiently realistic that the teachers did not omit reward to their simulated learners. (This corroborated our informal observation that the situations had much realism for the teachers. That is, after a task developed, they seemed to lose themselves in the business of teaching. This was not true of all the subjects all of the time, but was a striking feature of the program.)

The correlation between the situations indicated that individuals reacted similarly in both situations. This suggests that teachers can be assessed for rewardingness in simulations, and that it is worthwhile to try to learn to train them under simulated conditions.

Table 4 presents the results for informational communications.

Table 4

Index of Informational Communications in Simulated and Classroom Situations

	Mean	S. D.	t	r
Classroom Teaching	74.5	17.42	13.56 (0.005)	.54 (.10)
Communication Tasks	92.5	18.15		

The communication tasks were more information-oriented, which we would expect, because the teacher is assigned a concept to teach and faces a single, cooperative learner. Again, the correlation is in the positive direction, indicating the tendency for the teachers to react to the simulated learner much as they react in the classroom (the information-oriented being so in both direction).

Table 5 presents the index "informational questioning."

Table 5

Index of Questions Related to Information

	Mean	S.D.	t	r
Classroom Teaching	3.6	2.38	3.23 (.10)	N.A.[a]
	6.2	3.44		

"Open" questions are defined as those to which there are no fixed answers. In this sample of trainees, the proportion of open questions was very low, compared to the other samples of pre and inservice teachers we have studied.[5] Hence, the correlation does not seem applicable. The comparison of means indicates a trend for a larger number of open questions to be asked of role players. It may be that this indicates a real difference in the two conditions, and, one wonders, if this difference might be utilized to make simulated teaching conditions a good setting to teach difficult teaching maneouvers.

[a] Not applicable

Table 6

Index of Communications Directed at Procedures

	Mean	S.D.	t (p.)	r (p.)
Classroom Conditions	23.7	6.12	15.00 (0.005)	.14 (NS)
Communication Tasks	11.7	3.94		

In Table 6 the index of procedural communications is presented. The results indicate that the proportion of communications devoted to procedures is much lower under simulated teaching conditions. This difference is likely attributable to the structure of the communication tasks in which procedures are fairly well established, and only one, compliant, learner needs to be organized. Communication tasks of this type might be expected to suppress procedural communication. The correlation is very low, indicating that there is little similarity in this type of behaviour for individuals in the two situations.

Although only one of the five correlations between simulated index and classroom index was statistically significant, the general pattern of correlations was positive indicating that the two situations are to some extent measuring the same characteristics.

Conclusions

The sensitivity training program evidently had little direct effect on sensitivity as designed, but did effect a logically related behaviour, rapport-building, which may be the initial behaviour affected by such a program. Also, training did not seem to affect classroom teaching in any observable way, although it arrested the flow toward directness that characterized the control group subjects.

The rather consistent relations between teaching behaviour in simulated conditions and normal classrooms, howver, indicated that the simulated settings are, to some extent, similar to "real" teaching settings so that we can hope to learn to use them as training environments.

Although not entirely positive, the results are taken to indicate

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[5] See, for example: Clark Brown, The Relationship of Initial Teaching Styles and Selected Variables in Student Teaching; unpublished Doctoral Study, Colombia University Teachers College, 1968.

the potential value in continuing to explore simulated teaching tasks in the training of teachers.

Chapter Ten-D

The Social System of the Classroom

The Processes

One of the most important aspects of interactive teaching is helping the children develop a social system and a sense of community. Even a group of youngsters who work together on a short project need to develop a rapport and modus operandi that enables them to work and grow together. A classroom group which works together for a year or more has an overpowering need for community.

Many teachers have great difficulty establishing an effective social system, especially in inner-city classrooms. This dimension of interactive teaching is so complex and difficult that this special sub-component has been devised to ensure that a significant effort is made to help the teacher candidate develop the understanding and skill which is necessary if he is to build strong and effective communities of children.

Until the last few years there has been altogether too little attention given to the development of strong training programs in this important area, although many educational theorists and research scholars have stressed its importance in the educational process. In Chapter Four of Bruce Joyce and Berj Harootunian, The Structure of Teaching (Chicago: Science Research Associates, 1967), there is an extensive review of research and theoretical positions in this area. This review will not be repeated here-- it will be assumed that the importance of the area is obvious and that the reader has acquainted himself with the important literature in the area.

The last few years have seen the development of several lines of inquiry, however, which have been directed at the development of procedures for helping teachers develop greater competence in shaping the classroom community.

Gerald Weinsten has developed procedures for "strength training," focussing on the competence to develop structure in hard-to-control student groups. His procedures employ communication tasks of the type employed in the Flexibility Training sub-component described in Chapter Ten-C, except that the simulated students are trained to resist development of rapport and classroom organization, and the teacher candidate is taught how to cope with dissonant behavior and initiate structure in the face of disruptive behavior.[1]

Michael E. J. Orme carried out an investigation of teacher and student behavior in "out-of-control" classrooms. Focussing on the reinforcement patterns of the teachers, he came to the conclusion that their "reinforcement schedules" were inadvertantly encouraging disruptive behavior without sufficiently encouraging cooperative patterns. He taught the teachers to vary their patterns of reinforcement and was able to report improvement in the productive activity of the students and a decrease in disruptive behavior.

Louis Smith has conducted an anthropologically-oriented study of an urban classroom[3] during which he attempted, among other things, to analyze the dynamics of developing a stable social system in the classroom. He prepared a position paper for this program which builds on his research and recommends a set of competencies which may enable a teacher to build an effective social system. The paper appears as part of the Appendix to Chapter Ten.

Working from the belief that the community of the classroom should be an intimate part of the whole teaching process, Joyce has examined the social dynamics of various teaching strategies and developed a training program which **teaches** the teacher candidate how to select and carry out teaching strategies in terms of their effects on the social system of the classroom. These processes which Joyce has identified, added to the analytic tools developed by Smith, constitute the focus of the component.

As we have studied young teachers trying to build social systems in classroom groups in inner-city schools, we have come to the belief that there is a strong relationship between the kinds of teaching strategies that are preferred by the teacher and the social systems which are likely to result. For example, for the last several years we have observed carefully a number of young teachers who are extremely child-centered and who tend to favor teaching strategies which are extremely non-directive. That is, they give the students a great deal of opportunity to shape the activities that emerge. Frequently they have great difficulty in inner-city classrooms, especially with youngsters that are not used to helping shape the activities, and an extremely high amount of disruptive behavior often results.

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[1] See: Joyce and Harootunian, op. cit., for a decription of some of the tasks.

[2] Michael E. J. Orme and Richard F. Purnell. "Behavior, Modification and Transfer in an Out-of Control Classroom". a paper presented to the American Educational Research Association 1968 Annual Meeting.

[3] Louis Smith and William Jeffery. The Complexities of an Urban Classroom (New York: Wiley, 1968).

When this occurs, we have attempted to induce these teachers to modulate their strategies and use, for a while, approaches to teaching which have a fair amount of structure to them. That is, we attempt to induce the teacher to teach in such a way that he directs a great many of the activities rather than putting the burden for such direction on the students. Then we attempt to help him shift his strategies to ones which will teach the students how to participate in the development of learning activities. From that point, we have tried to help him gradually move back toward his preferred non-directive style, but this time having prepared the students by teaching them how to work with him.

We also encounter, of course, teachers who prefer teaching strategies which are very controlling. Many of these teachers experience very few overt difficulties with discipline and many people praise them for the early adjustment to teaching. We have attempted to induce them to learn to employ less directive strategies so that they can begin to move their students toward greater amounts of independence. In other words, we attempt to help them to develop the capacity to select and use teaching strategies that will induce a cooperative social system.

The central processes which are dealt with in this component are those of learning how to select and employ teaching strategies to improve the classroom social situation.

The Behavioral Objectives

The behavioral objectives flow from the above analysis of the processes by which one studies and regulates the social system of the classroom through the selection of teaching strategies.

1. The teacher can use Smith's techniques of micro-ethnology to study the activity pattern of the classroom. (See the Appendix to Chapter Ten for Smith's paper and his book, The Complexities of an Urban Classroom.

2. The teacher can analyze teaching strategies in terms of amount of external structure, task complexity, provisions for teaching students their roles. These elements will henceforth be grouped together and referred to as the social system or social structure of the teaching strategy.

3. The teacher can employ teaching strategies that vary in the amount of structure.

4. The teacher can defend his selection of teaching strategies in terms of social system goals for the classroom. That is, he can select teaching strategies partly because of their effect in building a social system in the classroom and he can build the rationale for his selection of a strategy, or a sequence of strategies, on those terms.

5. The teacher can analyze the effects of his teaching strategy on the social behavior of the children, especially the amount of responsibility they take for their own behavior and its regulation, the number and kind of behavioral disturbances that occur, and the causes of those occurences.

6. The teacher can create teaching strategies in the curriculum areas in which he operates in such a way that they embody provision for developing a social system. In other words, a math teacher can design lessons and units to bring about a particular kind of social situation. Especially, he can vary structure, task complexity, and role training.

7. The teacher can help other teachers to analyze their teaching strategies in terms of structure, in terms of effect on the social system of the classroom and in terms of the possible alternative strategies which might be employed to change the social system.

These objectives are not unrelated to those which are the goals of the "teaching strategies" component.

The Rationale of the Component

Ordinarily a teaching strategy is looked on as a way of imparting subject matter or inducing students to think or to explore their feelings and their possibilities for self-development. In other words, teaching strategies are usually considered in relation to behavioral goals for students. In the present context we make the assumption that every teaching strategy has within it social arrangements for the individuals who teach and learn in the situation. Some teaching strategies encourage free association of thought, whereas others focus on predetermined lines. Some teaching strategies ask us to take a great deal of responsibility as learners, whereas others impose a social system on us. Some teaching strategies make the way we feel about ourselves and the content an important part of the proceedings, whereas others draw our attention away from ourselves and toward external events. This component is organized to help the teacher analyze the amount of social structure in each teaching strategy, and the amounts of training that it gives to students to help them direct their behavior. The assumption is that the teaching strategy affects the social relations in the classroom as well as what is learned. For example, where there is a great deal of disruptive behavior a teaching strategy with a fair amount of structure in it will reduce the amount of disruptive behavior.

The component is built on the assumption that teachers can learn, through rational analysis of the social situation in the classroom, to control their teaching behavior in order to institute a wide range of strategies that will have different social effects on the learners. For this competence to develop, the teacher must practice diagnosing social aspects of student groups, testing out strategies, and observing the effect. He must do this many times before he can not only control a range of strategies, but also create appropriate strategies tailored to the needs of the students.

The Means of the Component

The component consists of Seven phases, each one of which is directed toward one of the six behavioral objectives, with some overlapping. The behavioral objectives do not necessarily have to be achieved in order. However, portions of several phases must be accomplished in contact laboratory settings which to some extent, in practice, fixes their order.

Phase One.

Learning the techniques of micro-ethnology. Working in inquiry groups during the "experiencing the school" phase of the contact laboratory, the candidates should apply Smith's techniques to the analysis of classrooms. They should "try on" Smith's conceptions of the development and operation of the social system and examine the variations that occur in various classrooms.

Phase Two.

Learning to discriminate the amount of structure in a teaching strategy. In the Appendix to Chapter Ten-B we have described nine teaching strategies, each one of which is derived from a model of learning. Among the other dimensions which are used to analyze the teaching strategies was the social system. The following chart ranks the nine teaching strategies along this dimension of external (teacher-induced) structure and student role training.

Teaching Strategies by Social System

Name of the Teaching Strategy (Theorist)	Amount of External Structure (vs. Student Responsibility)	Provision for Helping Students Learn Participatory Roles
Programed (Skinner)	Very High	Moderately High
Self-oriented (Maslow)	Very Low	Moderate
Non-directive (Rogers)	Very Low	Low
Advance Organizer (Ausubel)	High	Low
Concept Attainment (Bruner)	Moderate	Moderate
Inductive (Taba)	Moderate	Moderate
Inquiry Training (Schuman)	High	Moderately High
Differential Training (Hunt)	Variable (From very high to very low)	Very High
Inquiry (Thelen)	Low	Very High

(At this point the reader should familiarize himself fairly well with the contents of the Appendix to chapter Ten-B which describes the nine teaching models. It will be extremely difficult to understand what follows unless the Appendix is mastered.) In the preceding table it can be seen that the strategies range from a very high degree of external structure to a very low degree of structure and they vary equally in the amount of provision for teaching students to take increased direction for the subsequent carrying-on of the particular strategy.

The programed strategy, for example, consists of sets of questions or problems which are mediated by either a teacher or through media of some sort. These problems almost totally control the activities of the learner and reward him on attainment of particular objectives, which are prepared beforehand. Furthemore, the material is structured in very easy steps, making it likely that there will be a minimum of confusion. The programed strategy is so well-structured that it is used as the basis for self-instructional materials that can be used by quite young children with a minimum of assistance from the teacher. At the same time the program strategy includes provisions (these too can be programed) for teaching the learner exactly how to carry on the activities. As a consequence it is a very controlling strategy and induces enormously high degrees of structure into the classroom situation with a minimal amount of confusion.

The extreme contrast is the non-directive strategy which stipulates that the structure will emerge entirely from student activity. That is, students will develop their role as well as the content and the procedures of learning. As a consequence the strategy imposes almost no structure on the situation except that over a long period of time it requires the student to take a great amount of direction.

Thelen's group inquiry strategy, on the other hand, has a fairly low amount of external structure since the activities are to be defined jointly by the teacher and the pupil but there is extremely high provision for helping students define the participatory roles. It stands out from Hunt's differential strategy, which varies with the personality of the student, providing fairly high structure for students who are relatively inflexible in personality and requiring students who are flexible and complex in personality structure to take a great deal of responsibility in the development of their activities. Hunt's strategy also provides for a high degree of activity directed at teaching the student how to develop the social system.

In Phase Two the teacher candidates try out the teaching strategies and study the social aspects along the lines indicated just above. The research techniques described in Chapter 13-B, especially the Flanders and Joyce systems, can assist this study and make it more precise.

Phase Three

The objective of phase three is that "the teacher" will be able to carry out the strategies described in Appendix 10-B. This objective is in common with the Models of Teaching sub-component and is the major objective of that component. The procedures are described in Chapter Ten-B.

This phase of the sub-component should be continued until a student (in the judgement of his peers and the faculty) is able to execute, with children, teaching strategies which will present a range of structure and is able to do this deliberately. It is acceptable if he does this in micro-teaching situations or with classes in "natural" situations in the public schools or in small group teaching within the public schools.

Phase Four

"The teacher" will be able to select strategies of different structure or create them following his analysis of social needs of the students in a given natural situation. This phase occurs during the "small-group teaching" phase of the contact laboratory.

The candidates working in feedback teams analyze the social situation of a given group of children. They then make a diagnosis of the social needs of the students and rationalize this in terms of a theory of learning, theory of social development, or a theory of teaching. They recommend that certain teaching strategies be used with these students because they will produce a more effective social system.

Preferably, the feedback team watches the class or group for a number of hours, looking at the social situation until they are prepared to form a judgement about the social needs of the students. The team then makes a prescription along the lines we have been describing. It is probably desirable that each member of the team make his own prescription. The candidates then defend their choices of teacher strategy, balancing their own opinion against that of their peers. At this point they are ready for phase five.

Phase Five

The feedback teams prepare a plan for teaching, including materials, carry it out, and analyze the effects on the student behavior. The analysis of effects can be carried out in a number of ways. If the students are very unruly, the analysis might be to observe the effect of the introduction of the structure on the number of behavioral incidents of disruptive behavior. If the goal of the lesson is to induce the students to take greater responsibility for their actions, then the lesson might include provisions for giving the students opportunities to take responsibility and then the group of observers could look at whether or not they did and whether the situation improved over successive teaching episodes.

Phase Six

This phase occurs during the unit-experiment phase of the contact laboratory. The Inquiry-Group, as it develops its experiment, plans for the development of the social system. As the unit progresses, they analyze the social situation and revise the strategies they are using.

The number of variations on this phase are numerous. Teachers who follow Rogers for example may experiment with Rogerian non-directive strategies for quite a long time, studying the effects of the strategy and working out their particular stylistic way of carrying it out. The same would be true of any other strategy. A group that prefers Thelen's strategy might work for quite a time learning how to carry out a cooperative inquiry and make it work. Candidates who work in very difficult situations might concentrate on the introduction of structure into the situation. The possibilities are really endless. The objectives are not fully achieved until the teacher, as a normal part of his activity, analyzes what he does in terms of the social effect on students and does his planning and his teaching in terms of the effects of that dimension.

Phase Seven

A teacher helps others analyze their teaching strategies in terms of the social dimension and assists them in assessing the effects of that dimension on the social behavior of their pupils.

This phase is an internship or inservice phase and assumes a "school is a center of inquiry" in which teachers work together not only to teach but to study the effects of what they do on children, or, at the least, an internship situation which provides the opportunity for experimentation and study of teaching and learning.

This phase should continue, in some form, throughout the continuing education of the teacher.

Administration of the Component

The administration, support systems, evaluation and feedback systems, and other aspects of developing the component are identical with those already described in Chapters 10-B and 10-C.

Chapter Eleven

Institution-Building

Teacher education programs have generally put much more energy into preparing the teacher to work directly with children than they have to preparing him for his roles as an institution builder or simply responsible faculty member. In contrast, we place as much emphasis on the teacher as a developer of curriculum, an organizer of technological systems and a designer of the social system within the school as we do to his functions as an instructional decision maker and interactive teacher. The justification is, of course, that education depends greatly on institutional character. The teacher does not work in a vacuum nor do the children learn simply by interacting with the teacher. The teacher teaches within an institutional context that affects whether he will have close colleagues, what talents they will bring to him, and what kind of relationship they will have.

The character of the school largely determines what type of technical support systems will be available, what kinds of in-service training, what cooperation he will have from the other school faculty in dealing with common problems, what curricular structure he will work within, and a host of other things. If the reader needs this point underscored, he might turn to the description of the School as the Center of Inquiry (Chapter Eight) and compare the institutional possibilities for education in that kind of institution with those that are ordinarily found on the public school scene.

The child, too, is enormously affected by the institution and not only through the effects that the institutional structure has on his teachers. Schools have social systems and in some of them the social systems work against the educational purposes of the school.[1] (Peer pressures, for example, affect student preferences for activities.) Hollingshead and many others have conducted depth studies of schools which make it fairly clear that the average school's social structure reflects the social structure of the community at large, a happenstance that can work for good or ill. Whereas in some communities the school is a place of serious and lively dialogue on the nature of the society, in other schools the status system of the society operates and some students receive better treatment than others because of the social position of their parents.

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[1] James Coleman, The Adolescent Society (Glencoe: The Free Press, 1961) describes this phenomenon.

Schools vary, also, in the vigor of their social climate. In some schools the curriculums are relevant and live and the teachers have enthusiastic agreement about what they are trying to accomplish. In others, the curriculums seem mechanical and the teachers teach alone. The physical setting and logistical arrangements also affect the students. In some schools there is great support by materials and auxiliary personnel. In these schools the learners have many options for developing themselves: they can read more widely, show themselves more films, perform more scientific-explorations, teach themselves through self-instructional courses, and so on. In other schools the technological support systems function less well.

The school as an institution, then, is an enormously important education force. By giving so much prominence to institution-shaping competence in this program, we manifest operationally our belief that the institution-shaping functions of the teacher are as important as anything else that he does. Hence, the inclusion of the component, is, we believe, the most extensive preparation of its kind that has ever been designed into a teacher education program.

There are those who will say, "But will the teacher have the opportunity to use his institution-shaping ability, considering the way schools are run today?" While acknowledging the difficulty, we insist that institution-building is an essential for teaching, for learning, and for the overall redevelopment of the school in our society. A teacher-innovator who innovates only within the four walls of one classroom would probably be a wonderful person, his effectiveness would not be as great as if he participated actively also in the creation of a proper milieu for his students. It is possible, in fact, that changes confined to the one classroom may actually work against the efforts of many of the other teachers.

The Processes

The processes which are involved in shaping a school have been defined by Joyce in the book Alternative Models for Elementary Education. (Boston: Blaisdell, 1968). These include, first, the process of developing of organizations of community leaders, educators, students, school administrators, and persons whose children will be in the schools. Such an organization constitutes what Joyce calls the "Responsible Parties" and these are the people who are entrusted with designing the educational program and modifying it as time goes on. The second process is that of selecting the mission of the school or the distinct purposes that it will have. In order to participate in this process the teacher needs to be well acquainted with wide varieties of approaches for developing educational programs. He needs to be knowledgeable about theoreticians and practical men who have designed educational missions of various kinds. He needs to know, for example, about A. S. Neill's school Summerhill, about the Bank Street School, the academic mission as Bruner has described it, the desires of community groups today engaged in the redevelopment of education.

The third major process in shaping the school is the development of the means of education, we can define these as three: curricular and instructional systems; technological support systems; and the social system or community of the school. In order to develop these the teacher needs to have a wide acquaintance with alternative patterns of curriculum and instruction, with varieties of technological support systems and ways that they can be organized to support education, and with the dynamics of the social system of a school and how it can be developed.

The last process is the development of the organizational plan of the school. To do this adequately the teacher needs to know about alternative systems for organization teachers and students so that the educational environment will be stable and yet responsible to the needs of individuals and the spontaneous events of the world. Since Joyce has described the strategies for developing teams of responsible parties, for approaching the tasks of identifying the missions of the school, for building their curricular, social, and technological systems, and for developing organizational plans that are compatible with missions and means, it is not necessary to detail these processes here. They will be described somewhat in the course of developing the particular specifications of the component especially the behavioral objectives, but the full analysis requires the reader to turn to the entire volume Alternative Models for Elementary Education and to Chapters Two and Four in Joyce and Harootunian's The Structure of Teaching (Chicago: Science Research Associates, 1967).

Behavioral Objectives

The behavioral objectives of the component are extremely complex, for the shaping of the school requires knowledge and skills in a great many areas. Rather than develop a long list of objectives, large general objectives are stated with specific examples for clarity. In this way, it is hoped that vagueness can be avoided but that the chaos of a large number of different objectives can be avoided as well. The objectives in some cases are closely correlated with those of some of the components of the Interactive Teaching sub-components. The objectives are sequential only to a moderate extent, and the sequencing is largely in terms of a general progression from theoretical learning toward practice in simulated school settings and then to actual practice in institution-building. These do not represent discreet levels of attainment.

The First Objective

Knowledge of major theoretical positions on the shaping of the school. This includes knowledge of the theoretical work and research on the institutional problems of innovating in education. (See Matthew Miles. *Innovation in Education*) It also includes knowledge of the major contemporary reformers such as A. S. Neill, Herbert Thelen, Jerome Bruner, John Holt, Robert Anderson, John Goodlad, and others who have within the last few years attempted to develop new institutional plans for education. It also includes knowledge of reasonable sample of historically important positions, such as those of Plato, Comenius, Locke, and Dewey. In addition the teacher needs acquaintance with case studies of attempts to build educational institutions self-consciously, including some contemporary examples such as Novar School, the Horace-Mann-Lincoln School, the Valley Winds School, the Laboratory School at the University of Chicago, and others (see the *Structure of Teaching*, Chapter Four).

The Second Objective

Knowledge of procedures for developing organizations of community members, educationists, and students to develop educational patterns and carry them out.

The teacher needs to be familiar with reports such as the decentralization report of the Ford Foundation on the New York City schools, and with case studies and general positions on the developing of community agencies with participatory government boards. (Again, see: *Alternative Models for Elementary Education* and *The Structure of Teaching* for guides.)

The Third Objective

The skill to organize participatory groups to develop educational components.

This includes the ability to organize a steering committee and carry it through the planning stages so that a component of education is actually organized. This is the operational aspect, of course, of the Second Objective.

The Fourth Objective

Knowledge of the alternative missions of the school which have been suggested in the theoretical literature or developed in practice.

This involves an understanding of the fundamental theoretical positions from which educational missions are derived. For example, the psychoanalytically-oriented theorists tend to favor missions which are oriented toward the individual and toward his development into an integrated and functional self. Academic scholars tend to favor missions which emphasize academic learning in nature and social reformers or socially concerned people such as Dewey, tend to be concerned that the social functions of the school supply a plentiful number of effective citizens. This objective includes an acquaintance with the major conceptual systems for studying the learner and making judgments about his intellectual, social and emotional development, includes the knowledge of a general theoretical position on learning and the general strategies which have been developed for organizing curricular systems. Within one curriculum area the teacher needs a thorough knowledge of current leading curricular and instructional systems. (When the means of this component are discussed, we will illustrate the attainment of this competence through the social studies, but that is simply for brevity and convenience.) Obviously it should be true of specialist teachers in mathematics, science, social science, language, reading, and in social development. An example of a specific objective is: "Knowledge of and ability to implement the major approaches to curriculum and instruction in the social studies." (See, for example, Joyce's paper "Alternative Models for the Social Studies" which follows in the appendix for this component.)

The Fifth Objective

Knowledge of strategies for tailoring an educational system so that it fits the needs of specific communities and learners.

This includes the ability to analyze the educational needs of communities and learners and to develop curricular and instructional strategies which are calculated to fill those needs. (See The Structure of Teaching, [Chapter Two] and Alternative Models for Elementary Education for definitions and guides to the literature.)

The Sixth Objective

Knowledge of alternative ways of organizing the technological support systems of schools. This includes a knowledge of contemporary technological assists to human behavior, conceptions of library design and utilization, and the theory of support systems. The teacher needs, for example, to know how to operate the individually prescribed instruction program developed at the University of Pittsburg. He needs to know how dial-access retrieval systems function, and how a library can be organized to provide random access by students to books, original documents, films, film strips, tape recordings, multi-media courses children can administer to themselves, and so on. The teacher knows how to use television tape recorders for storing and using lectures, the use of television feedback to analyze group behavior, etc.

The candidate should develop a high level of skill in the administrations of at least one technical support system.

The Seventh Objective

The teacher should have knowledge of the theoretical and research literature that pertains to the development of the social system of the school and should apply a strategy for building social system. Specifically he should have a knowledge of reports such as the Teachers College Report on the Washington, D.C., school system, Coleman's Adolescent Society, Hollingshead's Elmtown's Youth, Waller's The Sociology of Teaching, Smith's Complexities of the Urban Classroom and Social-Psychological Aspects of School Building Design.

In addition the candidate should possess analytic tools for looking at the social system of the school and should know the major theoretical positions with respect to the development of social systems. For example, he should be acquainted with Homan's The Human Group and the work of John and Elaine Cumming on Milieu Therapy. Guides to this literature are provided in The Structure of Teaching, Chapter Four, and Alternative Models for Elementary Education.

Also, he should be able to work with teachers and students to develop at least one aspect of the social system of the school. If he is a foreign language teacher he might demonstrate that he can organize students and other faculty to operate the language laboratory support system so that it will provide prescribed types of service to the students and teachers. If he is a science teacher he might work with students and faculty to set up a self-instructional science laboratory or the equivalent. In other words, he should be able to define aspects of the social system and bring them into being.

The Rationale of the Component

One of the great difficulties in interesting teachers and to Teacher Candidates in institution building is the tradition in education that teachers do not play important roles (in the average case) in the development of the school. Teachers have generally been hired for specific teaching positions and their duties have been oriented toward a specific group of children. In many situations teachers have felt powerless to influence the overall shape of the school. Despite attempts by theoreticians of administration and supervision to bring about different practices in the schools, there is no question that the teachers were frequently correct about being powerless. The teacher candidate has observed enough schools and teachers that he usually enters teacher education with no expectation that his duties will be at the institutional level. Therefore, he frequently does not even see why he should study alternative patterns of curricular organization even within his subject area. The teacher-to-be often wants to study interactive teaching rather than look at curriculum from grades one to twelve or more. He tends to be willing to accept the placement of the courses into various grades and then to develop his technological competence within the given universe. To challenge this set is difficult and the rationale of this component has been developed with considerable attention to the problem of demonstrating to the young teacher that he can play an important institutional role and involving him from a very early point in his educational career with institution-shaping tasks that will help him see the usefulness in interactive teaching of the institution-building competencies.

The devices have been planned to build motivation for institution-building. The general democratic teaching strategy of the teacher education program, involving candidates as it does in the governance of this program, the cooperative inquiry method within each component and the inclusion of the candidates in the operation of the technical systems that facilitate their learning, accustom the candidates to institutional decision-making roles and should help them see the feasibility of such involvement for all students.

Second, each inquiry group knows, from an early point in the program, that they are going to have responsibility for the enrichment-remedial school or for a section thereof. Our experience in the Teachers College, Columbia, program during 1967-1968 was that as soon as teacher candidates knew that they were going to develop a Summer School of their own for neighborhood children, many of those who had previously rejected institution-building activities eagerly embraced curriculum planning roles and worked enthusiastically to develop community organizations and technical support systems. Evidently, the knowledge of the assignment that was to come was highly motivating.

The third tactic is to involve the candidates from the beginning of the component, in realistic decision making in simulated settings. They make curricula and instructional decisions for a Harlem neighborhood, a New England town with a typical spread of socio-economic backgrounds and community problems, and an English town. They have available to them information on over fifty aspects of over fourteen youngsters who serve as the "student body" of the simulated school and complete case studies of the three communities. The curricular and instructional making tasks that they undertake in this simulated school are lively and realistic - designed to illustrate the importance of institutional planning as well as how to go about it.

In general, the component begins with exercises in the simulated school. (These are coordinated with activities from the instructional decision-making sub-component which also uses the simulated school.) These activities involve decision-making so that the teacher has to deal with different combinations of learners, different types of teaching tasks, various curricular organizational patterns, and different communities. The work in the simulated school leads to the study of strategies of curriculum and instruction which is combined with work on teaching strategies in the interactive teaching component. Next, the candidates study curricular and instructional patterns in their area of specialty, so that they will develop competence to bring a substantive area to institutional development.

From that point, the teachers try to apply the strategies they have learned. They have an assignment in the school as the center on inquiry. They develop and carry out experimental units. They operate the remedial and enrichment school.

The Means of the Component

The specific means of the component will be described sequentially in terms of phases, bearing in mind that the entire program is designed to involve the teacher candidates in institution-building.

Phase One

The first phase of activity takes place in the simulated school, which was described in Chapter Ten-A. The simulation consists of a great deal of information about three communities. One is Spanish Harlem, one is a composite town in New England which is called Prestonport for convenience, and the third is an English town named Banbury. The information deals with most aspects of social, political and economic life in the three communities. These sets of information on the three communities are included in order to permit decision-making tasks that require candidates to take into account the characteristics of the community. For example, they can be asked to prepare a social studies curriculum for the Spanish Harlem community, then for the New England community, and then for the English community. The differences in living circumstances and cultural heritage should enable the trainees to explore many ways in which community characteristics can be capitalized on in the building of a curriculum.

The second part of the simulated setting is a set of fourteen data storage and retrieval systems containing information on children. The fourteen learners, thus simulated through information, constitute the student population of the simulated school. By altering curriculum tasks with reference to the learners it is possible to induce the teacher candidates to come to grips with the ways that learner characteristics can be accommodated in curriculum construction and to explore the kinds of complications that develop when particular combinations of learner characteristics occur together. For example, tasks can be given that require curriculum-making for different combinations of children. Similarly, data can be presented so that the candidate has to cope progressively with various types of learner characteristics.

The component begins with the rationalization of the component to the inquiry group, the introduction to the simulated school, and the presentation of a problem task which requires institution-shaping activity. (See Chapter Ten-A for an example.)

During the first tasks it will become apparent to the trainees that they need some more substantive information for making decisions. They simply do not know how to create an educational institution. From this point the activities alternate between seminar sessions on institution-building strategies and activities in the simulated school. The seminars are built entirely around readings and materials which are designed to acquaint students with the strategies for approaching the institution-making tasks.

Alternative Models for Elementary Education is the first book to be read because it identifies positions of educational reform and provides ways of looking at the development of participatory government within a school, alternative approaches to the development missions of the school, the development of curricula systems, technological support systems, social systems, and school organizational patterns. In addition, Ralph W. Taylor Basic Principles of Curriculum and Instruction (University of Chicago Press, 1950), Jerome Bruner, The Process of Education (Harvard, 1961) John J. Goodlad and Robert Anderson's The Non-Graded Elementary School, (N. Y.: Harcourt, Brace, 1959), John Holt's How Children Fail,[1] and Jonathan Kozol's Death at an Early Age,[2] should be read. (These deal with various aspects of institution-building or with serious problems in current educational institutions.) During this seminar Alternative Models for Elementary Education provides the intellectual structure whereas the others are representative of particular points of view with regard to schooling and school organization. Alternative Models provides a rather comprehensive bibliographic guide to alternative missions of the school and alternative patterns for building curriculum, social systems and technological support systems as well as organizing the personnel of the school. The students with the faculty counselor should develop a program of readings to acquaint them with the major theoretical positions identified. Many faculties will wish to develop readings dealing with major positions in educational philosophy as well.

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[1] John Holt, How Children Fail (New York: Pitman, 1964).

[2] Jonathan Kozol, Death at an Early Age (Boston: Houghton, Mifflin, 1967).

This phase should be coordinated also with the "World of the Learner" aspect of the Teacher-Scholar Component to acquaint candidates with structures for studying and responding to individual differences.

Phase Two

Phase two of this component begins after the models of teaching sub-component of the *Interactive Teaching* component. The study of Models of Teaching provides the conceptual knowledge of nine approaches to curricula and instructional strategies and the possession of the ability to carry them out in the classroom. This provides essential knowledge and skill for the teacher. If a person is to be a shaper of a school he must have alternative approaches and know he is able to carry out a reasonable number of them. Otherwise, his discussion of curriculum and instruction will seem empty and artificial.

A seminar should then deal with the question of curriculum modes and how they can be organized. (See Chapter Eight.) The candidates, should also, working in the School as a Center of Inquiry, study the use of support systems for schools.

Phase Three

The study of strategies in the curriculum areas.

In this phase each teacher must bring himself to conpetence in the curricula and instructional strategies in one curriculum area. He needs to be acquainted with the major systems which are used in that area to approach instruction. Because these change the component needs to be redeveloped continuously by the faculty so it will include the current developments in the field. A support system of instructional material in the area should be provided so that the trainees can analyze them and learn to apply them to children.

In the appendix to this chapter there are two papers which represent the type of document which will need to be preaared to help the candidates orirnt themselves to the field of their specialty. With other materials, such as: Bruce R. Joyce, *Social Studies Extension Service* (Science Research Associates, 1968), and Bryan Massiales and Benjamin Cox, eds., *Social Studies in the United States* (New York: Harcourt Brace, 1967) these explore a number of approaches to the social studies and provide a map of readings and guide to materials in each field. Candidates should study the alternatives in each field and, in tutorial and small-group teaching, begin to try out the approaches and study their effects. These illustrate only the social studies field. The faculty should develop materials for each of the curriculum specialties. In the early-childhood field, for example, the teacher candidates need to study the different approaches defined by Bereiter and Englemann, Robinson and Spodek, Montessori, and others--they should *not* simply study one doctrine.

Phase Four

The Experimental Units.

The inquiry group should develop and carry out a unit of activity in the specialty of the members with a complete curriculum plan, support systems, and experimental design.

Phase Five

Each inquiry group should be assigned to a specific phase of activities in the remedial-enrichment school and should carry this work out with assistance from the faculty counselor. Candidates should plan all phases of the activity, and offer the component of education for the children. Hence, an inquiry group made up of reading specialists will operate a reading activity, the science specialists a science activity and so on.

Phase Six

The Feedback teams are apprenticed to the school as a Center of Inquiry to study institution-building activity and receive coaching from the staff of the school on the problems of shaping the school.

Administration of the Component

While there are quite a number of possible patterns for administering the component, a straightforward one involves the assignment of a faculty counselor to each inquiry group throughout the component. Since the component stretches throughout the program, this relationship can provide continuity for the group by providing a core of shared experiences. The group can be welded, through their common experimental activities, into the reference group that is so essential to the Teacher-Innovator component.

Other faculty members, assisted by advanced students working as interns, can staff the simulated school and keep up to date the bibliography and illustrations of alternative approaches to curriculum specialties.

As the inquiry group moves into the phases that involve experimental teaching, the faculty-counselor can continue to work with the group, helping them to design and carry out their experiments. During his long relationship with them, also, the faculty counselor can apply the differential training model in the manner described in Chapter Ten, The Interactive Teaching Component.

Evaluation and Feedback

The simulated school provides an environment in which performance is easily observed. The development and carrying out of the experimental units and the work in the remedial-enrichment school is, assuming the use of techniques for observing and analyzing teaching described in Chapter Ten, also easy to observe.

Both evaluation and feedback should be carried on in terms of solutions to institution-building problems rather than to the assimilation of content *per se*. It should, also, be informal and cooperative, although based on the analysis of performance.

Since institution-building is a group activity, the group should be the unit for most analysis of competence, whereas the individual and the feedback team was the unit in the *Interactive Teaching Component*.

Appendix: Chapter Eleven

Alternative Approaches to the Social Studies

by Bruce R. Joyce
Teachers College, Columbia University

Originally written for the Research for Better Schools
Conference for the Wilkes-Barre Public Schools
June 1968

The central purpose of this paper is to identify and place into context the chief currents in the social studies field today and to provide some criteria which a school faculty can use to begin to develop its own program. This purpose cannot be fully achieved, but we must bite the bullet and do our best.

General Assumptions

Since general curriculum reform is at issue here, we need to make clear our assumptive world, especially assumptions about the conditions that facilitate curriculum reform.

First, let us begin with the assumption that we will not much improve education in any area if we retain the multipurpose teacher, the functionary who uses all methods to teach all things to all people. If a school is organized into self-contained classrooms, or into departmentalized sections where teachers have to teach as many as one hundred pupils all aspects of one subject, then let us not attempt serious reform. It won't be worth the effort.[1]

Second, let us not assume that we can accomplish curriculum reform by retraining our teachers. In about four years, given the present turnover rate, fewer than ten per cent of that staff will be in the same job. Most of the members will have left teaching entirely, in fact. The effects of in-service training wear off quickly, in terms of staff attrition. To institutionalize curriculum reform means to commit to a continuous training program, which is self-perpetuating. (Incidentally, it cannot possibly extend to all staff in all curriculum areas.)

Third, let us recognize the absolutely critical nature of the social studies in the elementary school, with respect to the future development of the child. Social and political attitudes develop during the elementary school year. Tendencies toward open- or closed-mindedness begin to form. The personality matures. The child who enters the elementary school unformed and vulnerable to education leaves it with a personality and social value system that is not easy to change thereafter.[2] Hence, the role of the social studies is inflated considerably. It is society's best chance to sow the seeds of open-mindedness and civic concern, to reduce the likelihood of alienation, to draw the young mind into an active quest for a better society.

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[1] See for alternative:
Bruce R. Joyce. Man, Media, and Machines, (Washington, NEA, 1967) Alternative Models for Elementary Education, (Boston, Blaisdell, 1968) or Robert Schaefer, The School as a Center of Inquiry, (New York: Harper, 1967).

Last, let us recognize our deep ignorance about the directions the social studies should take. A generation ago a school could have felt pride if it reflected the trends of the time--if it had the national social studies. No longer is this the case. As the nation gropes for direction, the social studies gropes, too. To adopt the "average" program is to cop out. Your challenge is to create a relevant, driving social education out of the ashes of the present program.

Because of this, I want to press you, and to press my own views about reform. We may be ignorant, but let us not lack the willingness to strike out for a better society. Let us not fail to have our dreams, or to pass them on to our children.

Format of this Paper

Because we are a diverse group, I want to begin by treating the social studies historically, and in that way provide an overview of developments in the field and an analysis of current trends and problems. I want to conclude by stating where I would go were I a school faculty faced with the establishment of a new social education.

Before 1917. Briefly, the social studies did not much exist before 1917. There were sequential courses in world and United States history at the elementary and secondary school levels, and regional geography courses of a sort, but the application of the social sciences to contemporary problems and to the understanding of society (the real social studies) did not often take place.[3]

1917-1955. In 1917, by a report of a committee of the American Historical Association, the social studies was literally invented. Particularly, the reports strongly reacted to the formalism of history and geography and recommended much more attention to citizen preparation, especially through the study of social problems. One of the visible results of this report was the establishment of the Problems in Democracy course at the secondary level, an offering which still exists in about half of the nation's high schools.

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[2] For a review of research bearing on this problem see:
Bruce R. Joyce. Strategies for Elementary Social Science Education (Chicago: Science Research Associates, 1965).

[3] See for analysis:
Lawrence Cremin. The Transformation of the School, (New York: Knopf, 1961).

The period that ensued was marked by a tension between those who wished to emphasize the "solid" context of history and geography, and those who wished to prepare the child for citizenship and to facilitate his personal inquiry into the social world. The latter approach dominated theoretical writings and practice in the leading schools, whereas the sequential approach to history and geography, and the recitation-type teaching that often accompanied them, proved very durable in most classrooms from about the fourth grade up.

The philosophy of the problems approach can be overcondensed for our purpose into several principles:

1. The primary teaching strategy was to organize the class into a miniature democracy which would define and attack significant problems of interest to the group. The democratic process was seen to be as educational as the approaches to content.[4]

2. The "unit" of study was developed--a sequence of cooperative study into a fairly narrow topic. To facilitate teaching, teachers were provided with "resource units," lists of activities and materials which could be used flexibly as the unit developed.

3. The social sciences were to be taught as relevant to the children's inquiry. If the class was studying the economics of the community, for example, then concepts from economics would be emphasized. It is worth noting that this approach depended heavily on teachers who possessed great, flexible control over knowledge of the social sciences, and a serious weakness existed in this area. Curriculum guides became laden with long lists of concepts from the social sciences as efforts were made to shore up the teachers.

4. Instruction was to be kept relevant to the needs of the learner. Also, he was to study topics well within the realm of his experience. Curriculum guides suggested topics like "Home," "Family," and "School" for the early grades, and the "community helpers" came into existence. The social studies were to be integrated with other curriculum areas, especially through con-

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[4] See for example:
John U. Michaelis. Social Studies for Children in a Democracy. (Englewood Cliffs: Prentice-Hall, 1956).

struction projects and dramatization.

As you may guess, the social studies became the symbol of all that was hated in "soft, progressive education." You may also guess that at its best, the approach was superb. It was the ideal medium for enthusiastic children who were favored with a teacher who combined skillful leadership with a good education and a personal thirst for knowledge. Under those conditions, children who began an innocuous study of "toys" found themselves exploring the ships that carried the toys around the world and the nations where they were made or sold. In other words, some teachers started where the children were interested, drew them into an analysis of the society, and in the process provided them with the tools of social scientists.

By the late fifties, however, the movement had lost its force, and the major energy in the last few years has had a different direction.

1960--The Academic Reform Movement

In the late nineteen fifties many groups of academic scholars were assembled to see what they could do to build school curricula that would be centered around the practice and knowledge of the academic scholar. Stimulated greatly by the public outcry about education that occurred after the launching of Sputnik I, task forces were developed that began to create new curricula plans, instructional materials, and training programs. The best-publicized results have become popularly known, of course, as the "New Mathematics" and the "New Physics", but there has been work in most curriculum areas.[5]

The movement assumed that each academic discipline is characterized by ways of thinking (usually known as "modes of inquiry") and sets of ideas (the "structure" of the discipline) which are verifiable and constitute the core of funded knowledge in the area. It assumed as well that the best preparation for later life (and for later academic study) is to master these ideas and ways of thinking, for they help one to comprehend experience and to create solutions to problems.

The academic reform movement has been slow reaching the social studies, but there is presently a proliferation of projects whose products are reaching the schools.[6] Because there are many social sciences, some of which are very different from each other (contrast, for example, social psychology and history!), and because citizenship education can be construed in many different ways, there are many types of curriculum reform projects in the area.

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[5] The philosophy of the academic reform movement has been succinctly expressed in Jerome Bruner, The Process of Education, (Cambridge: Harvard Press, 1961). An overview of projects appears in John Goodlad, School Curriculum Reform in the United States, (N.Y.: Fund for the Advancement of Education, 1967).

There is, in fact, no current generally accepted definition of the social studies. The area draws its momentum from three sources which are emphasized to varying degrees in the current movement. These are: (1) an attempt to help the child find personal meaning in social life; (2) an attempt to prepare citizens who take responsibility for the improvement of the society; and (3) an attempt to make available to the child the concepts and modes of the social sciences. While the current decade is dominated by the third source, the others are present in some degree, and the result is a proliferation of approaches (for which I, for one, am very grateful).

Let us look at some of the variations that are now appearing.

To date, we can discern a half dozen curriculum plans for the social studies that are drawing their organizational structure from single disciplines in the social sciences. The Georgia Anthropology Project, for example,[7] is a Grade One through Seven project which introduces to the first grader a systematic framework for analyzing society and which broadens that framework through the years, introducing the methods of anthropology and archeology in the process. The approach is distinctly cross-cultural. Each concept that is introduced is seen in terms of more than one culture, and the child is taught to apply the concepts to his own society. The program emphasizes the "cultural universals," or cultural forms that occur repeatedly in human society. The expected outcome is that, by the end of the program, the child will be able to approach the analysis of society and cultural problems by applying the system of concepts.

The Georgia group has produced background materials for teachers, evaluation devices, and instructional materials for children. They have conducted substantial amounts of research into the effectiveness of the materials and the effects, also, of training teachers to use them.[8]

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[6] Many of the projects are listed and annotated in: Bureau of General and Academic Education, *Directory of Social Studies Curriculum Projects*, Pennsylvania Department of Public Instruction, Harrisburg, 1968.

[7] The Anthropology Curriculum Project. University of Georgia, Fain Hall, Athens, Georgia 30601. Directors: Dr. Marion J. Rice and Dr. Wilfred C. Bailey.

There are several other single-discipline-oriented projects under way. The University of Chicago Economics project, of which William Rader is director, has produced a set of units for the upper elementary school (grades four through six) which teach the ideas of economics and induce the children to apply them to the study of American society. The Purdue-Elkhart project, Lawrence Senesh, director, has worked to develop economics materials from grades one on through six. These materials are quite eclectic, and range far beyond economics, although that discipline provides the basic structure. They are appearing commercially through Science Research Associates.

An unusual but very interesting elementary school project is Ojemann's at Iowa, which teaches children a set of psychoanalytic concepts in relation to tasks involved in the development of an adequate self and self-other relationship.

A number of secondary school projects should provide ideas for elementary school curriculum development. The High School Geography project teaches sets of geographic concepts, in relation to interesting contemporary problems, and their use of gametype simulation is something that should be looked at. Fenton's history project at Carnegie Tech teaches the application of the historian's concepts and techniques in a wide set of inductive depth studies into important events and factors in the shaping of human society. Sociological Resources for Secondary Schools is another sample of the application of scholarly structure to a set of relevant, important problems.

A very few social studies curriculum projects have emphasized the research methods of the disciplines and have subordinated concepts to the modes of inquiry used in their creation. The Michigan Social Science project, developed by Lippitt and Fox, is interesting to me for two reasons. One is that it is constructed entirely from the discipline of social psychology and thus brings to the child a structure for analyzing his interpersonal relations. The other point of interest is that, more than any other project at either the secondary or elementary level, it teaches specific research methodology.

The instructional materials Lippitt and Fox have produced are intended for grades four through six. They constitute a systematic program which teaches the children to collect and analyze behavioral samples and to apply theoretical constructs to them. Among other things, the children learn interaction-analysis systems, how to measure attitudes, analyze firendship patterns, and build paradigms to understand the dynamics of work groups.

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[8] Rather than cite each project mentioned in individual footnotes, a list of all mentioned in this section is included at the end of the paper.

In Contra Costa County, California, the late Hilda Taba led the development of a social studies program which emphasized the inductive process throughout as being the basic method of social science. Hence, units and lessons were constructed around models of induction (generally, the teaching strategy emphasized data collection before analysis). From the earliest grades the children would practice aspects of inductive thinking, gradually developing more and more sophisticated forms. Because Taba worked very closely with the schools and teachers and conducted several research studies on this approach, she came to know a great deal about the inductive teaching strategy and the kinds of difficulties teachers have and the kind of training they need. This is reflected in the really excellent manuals that were developed there. The content of the Taba program is relatively conventional, but the methods of teaching stand out.

A rather different approach to the teaching of models from the social sciences via self-instructional systems is exemplified in the work which my wife and I are doing with our research team. We use self-instructional modules combined with random-access data banks to provide a setting in which children have much control over their own inquiry. Since we are describing this work elsewhere, I won't include thorough descriptions here, but append a couple of papers that can give you some idea of what we are up to.[9] While our research is oriented toward experimentation with teaching strategies and into children's inquiry, rather than toward the production of materials, we feel that we are demonstrating that children can use data storage and retrieval systems to obtain data on a far wider range of cultural events than is ordinarily available to them, and it is feasible to develop self-instructional systems that help children learn the modes of the disciplines and apply them to cultures.

While this little review does not exhaust the forty or so current curriculum projects, it does characterize the chief types of approach that can now be seen emerging. Even while we see the slow development of the academic reform movement in education, we can begin to see the stirrings that will surely follow it.

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[9] See:

"Data Banks for Children: First Studies" (in Press, Teachers College Record) and "Social Sciencing with Children" (in Press, Instructor), by Bruce R. Joyce and Elizabeth H. Joyce, and Bruce R. Joyce, respectively.

Toward Greater Humanism

When the academic reform movement was applied to the science and mathematics areas, the general course was agreed on without great dissent (although specific routes have been many and certain problems are hotly debated). It seemed clear, for example, that the structure and modes of thinking in the sciences would, if taught, help students learn to think better, would also serve to identify the critical topics that should be explored, and lent themselves best to inductive teaching strategies.

In the social studies, however, the source disciplines do not dominate so easily. Political and social attitudes form, as we have noted, during the elementary school years. One begins to worry about them. For example, in the cities we worry about helping the ghetto children learn to cope and to form positive attitudes and skills. What content, we ask, should the urban child study? Does he need to deal with harsh social realities? To learn how to use the welfare system? To keep from being exploited by merchants and employers? To resist drugs and prostitution? To use the power structure and enter into it?[10]

In a similar vein, we worry about problems of alienation and affiliation in a mass society. Should not the social studies mount a direct attack on alienation? Should they not work to increase the affiliation and social solidarity--the commitment -- of the young person?[11] Should they help him learn to participate in the formation of a world community in which citizens from many cultures and nations will try to forge a peaceful and interesting future?[12]

Also, we are concerned that the social studies serve the quest for personal meaning that lies at the center of growing up.

We ask ourselves whether the social sciences offer the entire diet of the social studies. Are there not other necessary ingredients?

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[10] See, for example:
The Report of the President's Commission on Civil Disorders. (New York: E.P. Dutton & Co., Inc., 1968).

[11] See Gerald Sykes. Alienation. (New York: G. Braziller, 1964).

[12] See the work of the Foreign Policy Association. Also: Leonard S. Kenworthy. Introducing Children to the World. (New York: Harper, 1955).

And so we examine the interesting work of Oliver and Shaver at Harvard[13] who have attempted to teach children systems for analyzing public issues--for identifying the heart of the questions and the basis for value stances. We look at the collaboration of the Foreign Policy Association and the Twenty-One Inch Classroom in Boston, where the "Cabinets in Crisis" programs involve children, related to the studio by telephone lines, in the intimacy of cabinet decisions in critical areas.

We wonder whether the critical purpose of the social studies should not be to engage the child in debate about the nature and future course of the society--a debate in which the ideas from the social sciences are important servants, aids to thinking, but servants to the business of probing into and improving the society.

Can we envision an emerging social studies, devoted to the creation of dedicated citizens of the world, who seek their personal meaning in dialogue and action with their fellow citizens? Such a social studies would be characterized by:

1. An atmosphere of dialogue and debate within the school, where continuous discussion about social issues and continuous quest for meaning would take place.

2. The systematic teaching of models from the social sciences--models for analyzing the society and clarifying the debate.

3. The use of self-instructional systems for teaching skills and basic information, so that the child who needs information or skills can acquire them at his own rate and time of need.

4. The use of mass media to convey information about the emerging age--to infuse the school with a sense of the changing world and to bring information from expert students and scholars within the reach of every child.

In such a school the multi-purpose teacher of everything will not work. Some teachers will create the media programs. Some will create and man the self-instructional systems. Some will teach models from the social sciences. Others will lead groups in the continuous debate about humankind from which will spring the richly diverse life on earth that will devour the technical barrenness we see today and use technology to create an ever-expanding world of human possibilities.

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[13] Donald Oliver and James Shaver. Teaching Public Issues in the High School. (Boston: Houghton Mifflin, 1966).

Projects Cited in Paper

Elkhart Indiana Experiment in Economic Education
Purdue University
Director: DR. Lawrence Senesh

Elementary School Economics Program
University of Chicago--Industrial Relations Center
Director: William D. Rader

Michigan Social Science Education Project
University of Michigan--School of Education
Director: Robert S. Fox

The Anthropology Curriculum Project
University of Georgia
Directors: Dr. Marion J. Rice and Dr. Wilfred C. Bailey

Appendix: Chapter Eleven

The Child and the Real World: The Role of the Teacher

by Bruce R. Joyce
Teachers College
Columbia University

A Paper Prepared for the University of British Columbia
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To define social reality, we must turn to the sources of reality, and in so doing, we shall imply that there is a real world. We will begin, however, with the assertion that the real worlds which we have to deal with in education are worlds which we have constructed. Hence, we cannot deal with them, these constructed worlds, without careful reference to the process by which we have put them together.[1]

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[1] Bruce R. Joyce and Berj Harootunian. The Structure of Teaching (Chicago: Science Research Associates, 1967) chapters 1 and 2. Bruce R. Joyce. Alternative Models for Elementary Education (Boston: Blaisdell, in press.)

We must identify, then, the sources of these constructed worlds with which we have to deal in social science education. The learner, the society, and the social sciences are three of the major sources.

Let us look first at the learner: his personal world, and his struggle to find meaning in his existence. The learner's world is inevitably a controlling part of the educational process, and unless the curricular and social systems of the school take account of that world, and help the learner himself to study it, and build it, and find that elusive meaning for which he seeks, then the education of the child will seem to be irrelevant to him, and may even frustrate and alienate him. But what a problem that breeds. How many learners are there, in how many places, with how many personalities, how many versions of reality? The real world of the learner is indeed immensely idiosyncratic, and the teaching strategies and the curricular systems which have been common in elementary education have, on the whole, been baffled and boggled in their attempts to include that real world that comes in so many guises and so many shapes in the personalities of our children.

The second source of reality is the social processes which are shaping human culture today. In our time, we see much criticism because the schools have failed to include, as a central part of curricular activity, the ferment which is presently reshaping human society. The school has allegedly failed even to include the dynamics of the ferment that has shaped the present situation. It is strange that this reality has not been incorporated more effectively into the main body of activities in the school. It is strange particularly because the mainspring of the progressive movement was the pragmatists' hope that a citizenry could be prepared who would have a central concern for the perfection of society, for the continuous application of the best in scientific thinking and concern for the common good and the communal process of improving human life.

With respect to social reality we again have this peculiar question, "How many realities are there?" In the United States at this time, you can look at the slums and see dirt, or you can see the rising of the black Phoenix, or you can see economic stratification. You can see violence and fear, or you can see solidarity and support. You can see schools which seem hopeless, or you can see brand new educational forms which are rising. What is the reality? And the answer to that, of course, is that all of these things are the reality, that there is no one dimension with which to view the interaction of humans in a fully productive way. There is validity to all of these constructed social realities, and many more.

The third source of reality is the modes of inquiry of the social sciences, for these are, at root, systems for attempting to establish reality in an organized way. The social sciences are conceptual systems for analyzing human events and identifying factors which operate when humans get together. They consist of ways of collecting and verifying data and organizing it, and employ logical systems, especially mathematical systems and systems derived from probability theory. Perhaps most important, the systems of thinking in the social sciences represent an emergent view of knowledge and a set of frames of reference from each of which certain aspects of social reality stand out so that they can be perceived and taken into account.(1a)

The learner, the society, and the social sciences all create, and in very different ways, the reality that must be dealt with in a social studies curriculum.

Relating to the Real Worlds

If he is to assist the child in comprehending and coping with these three worlds, the teacher needs to relate to those worlds himself and to help the child build bridges that will firmly link him into growth patterns in all three domains. For the teacher, this is a dual burden, because it involves his reaching out himself and establishing flexible and growing linkages into these worlds, and also that he learn how to help the child establish his relationships.

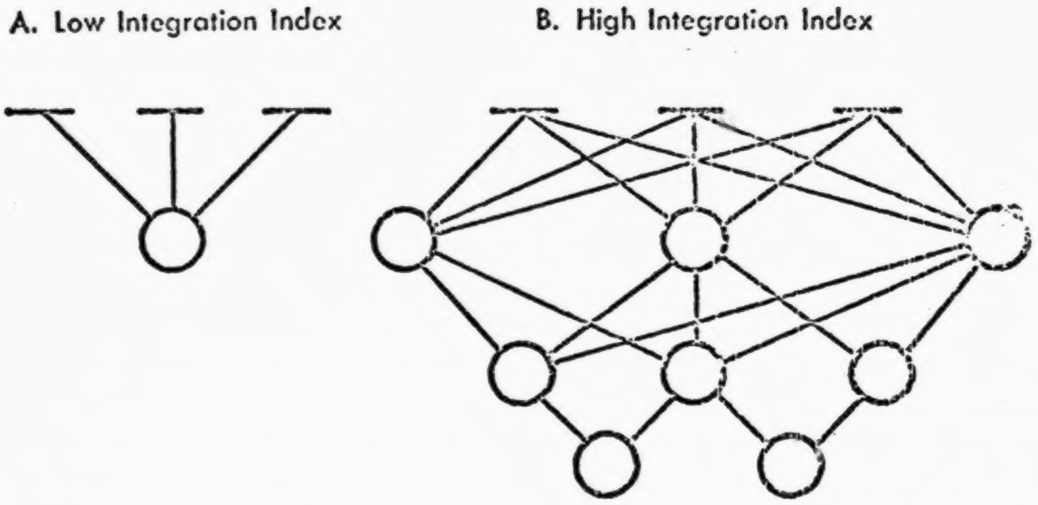
It is the thesis of this paper that both of these tasks can be accomplished through models that build conceptual bridges between individuals and their own growing needs, between individuals and other persons, and between individuals and the academic communities in which the disciplines are continuously formulated and re-developed. Let us look at three different conceptual models, each of which accomplishes one of the three bridge-building tasks. Each model operates in three ways. It helps us conceptualize one of the three worlds. Second, it helps us to make decisions about what to do to help the learner grow in relation to the world in question. Third, it helps us form a conception of what the teacher needs to be like if he is to relate to the three worlds and to help the child to do so as well.

The Child's World, Environment and Conceptual System

The psychologists Harvey, Hunt and Schroder(2) have developed an information processing view of personality development that provides us with a conceptual handle for looking at the child, exploring his real world, and selecting environments that will be likely to establish meaningful ties with his social environment. Whereas many developmental theories describe personality in terms of attitudes, needs, norms, and the like, Harvey, Hunt, and Schroder describe the structures, that is the programs, or sets of rules, by which individuals relate to their environment. For example, whereas many developmental theorists are concerned with the content of personality development -- with how a child feels about himself -- or the content of his political or social beliefs,(3) the conceptual systems theorist concerns himself with the structure of the system by which the individual relates to himself and his environment, that is, the characteristics of his information processing system.

Thus, their position has some community of stance with the developmental theorists who focus on cognition, as, in particular, Harvey, Hunt, and Schroder focus on the integrative complexity of the conceptual structures. Some individuals, for example, relate to the environment through relatively few dimensions, and those few dimensions are not very well integrated with one another. At the opposite end of the continuum are individuals who view the environment through many dimensions and manifest a high level of integrative complexity in their relationships to the environment. The number of dimensions with which a person relates is not necessarily correlated with the degree of integrative complexity in his system, but there probably is some relationship, that is, the more dimensions one has, the more likely integration is present. Highly integrated information processing systems have many more conceptual connections between rules, that is, "they have more schemata for forming new hierarchies, which are generated as alternate perceptions, or further rules for comparing outcomes. High integration structures contain more degrees of freedom, and are more subject to change as complex changes occur in the environment."(2b:7)

By the conceptual systems view, therefore, we can discriminate individuals in terms of their amount of integrative complexity. For example, in Figure One, we can see a diagram which illustrates the relationships among rules in situations of low and high integration.(2b:8)


A. Low Integration Index
B. High Integration Index

Rules are in a fixed relationship so that the whole process can be reduced to one rule.

Rules are in an interdependent relationship; each can influence the other singly and in combinations producing new connections and new rule structures.

Figure One

Variation in Level of Conceptual Structure

The Consequences of Levels of Integrative Complexity

Particular behavioral patterns are characteristic of different levels of integrative complexity. Let us look, for example, at the characteristics of behavior of individuals of low complexity.

"These general characteristics of behavior include:

"1. Categorical, black-white thinking. The discrimination of stimuli along dimensions is minimally graduated; for example, if a person holds an extremely concrete attitude toward Negroes, and 'Negroes' are categorized in a single way, it follows that all Negroes will tend to be lumped into one category (for example, 'bad') and contrasted with others. A structure that depends upon a single fixed rule of integration reduces the individual's ability to think in terms of relativeness, of 'grays' and 'degrees.'

"2. Minimizing of conflict. Stimuli either fit into a category or are excluded from consideration. There is no conceptual apparatus that can generate alternatives; the result is fast 'closure' in choice or conflict situations. When conflict is introduced (as with the presentation of attitudinal refutation or dissonance), it quickly is minimized and resolved. Theories which argue that cognitive dissonance is followed by strategies aimed at reducing the conflict have validity particularly in describing the behavior of persons with concrete structure in a particular attitude area.

"3. Anchoring of behavior in external conditions. It a stimulus is categorized in an absolute way, there is a corresponding restriction of internal integrative process, and alternate resolutions or interpretations fail to arise. In structures with a low integration index, behavior is maximally controlled by external stimulus conditions. With increasing conceptual level, alternative perspectives and interrelationships can be generated from the same dimensional values of information. This represents an increase in the concept of 'self' as an agent, a going beyond any single or externally given interpretation, and an increase in the conception of internal causation.

"4. The more absolute the rules of integration, the greater the generalization of functioning within a certain range, and the more abrupt or compartmentalized the change when it occurs. For example, if a stimulus person is categorized as holding the same attitude as the self, this perception (of agreement) will persist unchanged as the degree or nature of agreement becomes less or more complex. Conflicting attitudes tend to be misperceived or 'warded off' because of the absoluteness of the stimulus categorization and the lack of alternate schemata for 'sensing' shades of difference. In this sense, the perception of the other person is overgeneralized. When a person continues to perceive the world completely in terms of his own schemata, ignoring subtle situational changes and the alternate interpretations of others around him, he is 'projecting.' Thus, projection may be considered to be a defense mechanism commonly used by individuals low in integrative complexity. If the changes in the situation exceed a certain limit (which is defined in terms of the conditional rules for categorizing stimuli), the categorization of the stimulus person will change rather abruptly, and he will be perceived in a drastically different way. Another compartmentalized hierarchical set of rules negatively related to the first takes over."(2b:16,17)

Now, let us look at the characteristics of individuals of moderate complexity.

"The major characteristics of this second structural level are:

"1. The presence of a conceptual apparatus that is able to generate alternate organizations of dimensions. That is, if there are three dimensions, such a structure would provide at least two possible rules for combining these dimensions. A given stimulus could be placed at two different points on any or all of the dimensions. For example, a mother helping a child to dress could be coded as 'plus' or 'minus' on a given dimension (such as control) depending on which of the alternate sets of rules the judgment was anchored.

"2. At this level, there is, however, a lack of conceptual apparatus for relating or organizing differentiated rules. In these structures, schemata are related in the most primitive way. The integrating rules loosely specify conditionality; for example, in situation x, weight rule A higher than rule B. This does not involve the simultaneous use of schemata by superordinate rules other than conditional principles. In this sense, once a rule is engaged, moderately low integration index structure functions much like low integration index structure, except that other schemata are available.

"This moderately low level of organization is characterized by the delineation of several alternative ways of structuring the world. Although such conceptual properties are not effective for relating or organizing differentiated sets of rules for decision-making processes, they do usher in the problem of choice and probability. The generation of alternatives or of uncertainty is an important step in increasing abstractness, but at this level the system is characterized by ambivalence. Unlike low-level structure, for which the problem of choice is minimal, moderately low structure generates alternative interpretations without a fixed basis for choice or organization. For example, there is no fixed rule for what is right or wrong. Here conditions affect the choice not only of dimensions, as is the case of structures with a low integration index, but also of schemata.

"One of the most general implications of moderately low structure is that the discrimination of stimuli on dimensions remains relatively constant. That is, since each alternate organization is minimally modified by or related to the other, stimuli are still being 'read' primarily via a single schema. However, the dimensional structure is more complex in the sense that stimuli can be differentiated within a single dimension (that is, can be evaluated at more than one point). It is differentiation of stimulus placement within a single dimension that opens up the developmental possibility of relating the differentiated organizations and furthers the evolvement of higher-level structural properties.

"Some of the consequences of moderately low structural properties include:

"1. A movement away from absolutism. Because of the availability of alternate schemata, 'right' and 'wrong' are not fixed as they were in structures with low integration index.

"2. The emergence of primitive internal causation. A fixed system, based on a rigid set of absolutes, requires and expresses no internal processes. There is no freedom of choice. When alternates are available, the individual must make choices; internal processes, however minimal, begin to emerge. At the second level, the internal processes are mainly conditional, and in this sense they are primitive compared to the internal processes of more abstract structures.

"3. Instability and noncommitment. In the absence of both absolute ways of evaluating environments and complex rules for integrating alternate schemata, there is ambivalence and lack of consistency in decision making and judgment. From the observer's point of view, conditional rules may appear inconsistent, and their application may indicate lack of commitment. In psychoanalytic terms, the person might be described as having a weak superego.

"4. A form of rigidity still present, as in the first level. Rigidity there was used in the sense that external stimuli are perceived in a minimally differentiated and complex way; thus, the richness and range of experience is small. At this second structural level, the rigidity is due to the fact that, after the selection of a given schemata when one perceptual organization has been accepted, alternate schemata are almost completely ineffective. Information that could have entered the system via the rejected schemata is not available. There is, consequently, a failure to consider certain environmental pressures under some conditions.

"5. A 'pushing against' or negativistic orientation. When alternate schemata can be selected by a set of conditional rules, the person is able to generate and understand two or more ways of perceiving a given situation. But since the two evaluations are used in a compartmentalized manner, failure to utilize one schema can be interpreted by an outside viewer as 'negativism.' Further, the process of generating alternate schemata itself implies a 'pushing against' present or alternate schemata and can again be viewed as an expression of negativism."(2b:18,19,20)

Schroder describes moderately high development as follows.

"A number of important behavioral implications are associated with moderately abstract properties:

"1. The system is less deterministic. Combining and using two alternate systems of interpretation greatly increase the number of alternative resolutions that can be generated. Even when the individual closes on a particular decision, he is still open to a number of alternative pressures. At this level, abstractness (that is, lack of fixity) becomes a formal rule of the system.

"2. When system properties begin to permit the simultaneous utilization of two schemata, the environment can be tracked in many more ways. While moderately low integration index structure permits different ways of tracking or interpreting an environment at different times, moderately high integration index structure can vary combinations of alternate schemata. A person who is functioning at this level may view a social situation in terms of two points of view, see one in relationship to the other, perceive the effects of one upon the other. He is able to generate strategic adjustment processes, in which the effects of behavior from one standpoint are seen as influencing the situation viewed from another vantage point. This implies, for example, that a person can observe the effects of his own behavior from several points of view; he can simultaneously weigh the effects of taking different views. The adaptive utilization of alternate schemata here is much less compartmentalized than at moderately low levels.

"3. The presence of choice makes possible the use of internal processes. Such processes emerge in a rudimentary way in moderately low-level structure. However, the 'comparing' or 'relating' function, which is entirely an internal process, is characteristic of more integratively complex levels than the second. At the third level, structure is potentially self-reflective. The awareness of 'self' (and the 'self' as a causative agent) is greatly enhanced, although it does not reach its climax until the development of high-level structure. In moderately high levels of integrative complexity, rules are minimally fixed. They are no longer completely anchored in the past. When relationships are not thus anchored, the process of relating alternate schemata to each other is a highly internal one. It is internal in the sense that it is not anchored in established rules, in the sense that it represents a projection into the future, and in the sense that many different interactions can be generated in the same external situation. Functioning is decreasingly dependent upon immediate external stimulus conditions, and behavior is decreasingly predictable from a knowledge of the individual's past. In order to predict behavior, it becomes increasingly important to understand the internal processes of the structure." (2b: 21,22)

And, to complete the picture, let us look at the characteristics associated with high complexity.

"While moderately high structure generates rules for comparing and combining the effects of specific pairs (or small groups) of schemata at a time, high level structure includes additional and more complex potentialities for organizing additional schemata in alternate ways. At the fourth level, comparison rules can be further integrated. Alternate complex combinations provide the potential for relating and comparing different systems of interacting variables. As with other system differences, the difference between the moderately high and the high levels is one of degree. In the latter, the potential to organize different structures of interacting schemata opens up the possibility of highly abstract function (see Figure Two).

"In a very loose sense, and by analogy, the difference between moderately high and high levels may be described as the difference between an empirical and a theoretical outlook. At the moderately high level, a number of classes of empirical relationships are possible; in high-level functioning, it is possible to generate or apply general laws that systematize a large and differentiated body of information generated by simpler schemata in various related ways. Unlike the low level, which consists of a hierarchical set of extablished rules and procedures, high level functioning (which again reaches a form of unity in the system) is characterized by the ability to generate the rules of the theory, the complex relations and alternate schemata, as well as the relationships between the various structures. It has the potential to generate alternate patterns of complex interactions.

"As with other levels, an increase in the number and complexity of the parts of the mediating structure is accompanied by (a) an increase in the degree of diversity the system can generate and handle, in the number of schemata and dimensions, and in the complexity of their organization; (b) greater discrimination between stimuli within dimensions; and (c) an increased potential for the structure to generate alternate patterns of interaction and new schemata without the imposition of new external conditions. Internal processes can produce alternate organizations of rules for viewing the world. These schemata can then be tested by exploration.

"This very abstract orientation should be highly effective in adapting to a complex, changing situation. It is certainly much more effective than a structure that is dependent upon external conditions for building rules and upon past experiences for predicting events. The effectiveness of high-level properties would be maximized if the criteria of performance were based upon (a) the utilization of many alternate interactive processes, and (b) the ability to cope with situational change over time. Highly abstract structure permits the delineation of many systematically related alternatives. If

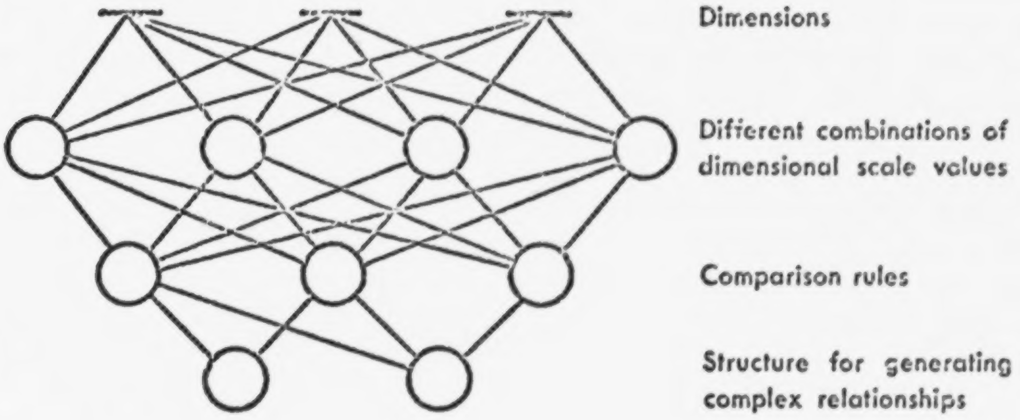

Dimensions
Different combinations of dimensional scale values
Comparison rules
Structure for generating complex relationships

Figure Two
High Integration Index

these can be kept in focus, decisions at a particular point in time should be most effective for adapting to a future event. At this level, the ability to discover and utilize information about a range of stimuli at any given time is maximized. High-level structure requires a rich set of empirical relations (evolved at lower levels), which can then be ordered in various ways through the emergence of superordinate rules. One of the problems in measurement is the empirical demonstration of such high-order schemata. At this level, schemata are not only compared; rules also exist for placing many schemata onto a variety of linear dimensions." (2b:22,23)

Conceptual Systems and the Real World

It is by now evident that one way for describing the child's real world is in terms of his conceptual development, and there are three important tasks that a teacher can have in relation to the conceptual system of the child. In the first case, he can learn to discriminate children according to these particular levels of development. For example, in Syracuse, New York, Hunt asked trained teachers to discriminate culturally disadvantaged junior high school youngsters in terms of levels of integrative complexity. In the second case, individuals of varying levels of integrative complexity perform very differently in different environments. For example, individuals of very low complexity have optimal performance levels under conditions of fairly high environmental structure, and are not likely to perform well under extremely unstructured or non-directed conditions. Hunt has described this in his evaluation of the Upward Bound programs.(4) In the third case, environmental prescriptions can be made to increase the integrative complexity of the individual; that is, optimal environments for growth in personality can be identified.

Let us look closely at each of these three tasks. *Discriminating the conceptual level of individuals* is extremely important because of the effect of conceptual level on the individual's real world. The real world of a person of low complexity (who regards his environment as fixed, who prefers hierarchical relationships, is evaluative and becomes rigid under even moderate stress) is very different from the real world of a person of high complexity (who can generate many alternative avenues for dealing with stress and opposition, who accepts the responsibility for creating rules in new situations and who can easily build conceptual bridges between himself and problem situations). The first individual is not likely to be adaptive, or flexible, whereas the latter individual is likely to have the capacity to generate new solutions to problems and to adapt to changing conditions. This would be true whether the individual is young or old. For example, mature physicists of about equal knowledge who differ greatly in integrative complexity could be expected to face problem situations very differently. Similarly, an elementary school youngster of very low complexity would be expected to perceive civil disorder differently from an individual of high complexity.(5)

Second, the very different performance of individuals who differ in conceptual complexity under different conditions poses an interesting challenge for the teacher who must attempt to change his real world. For example, when Hunt divided groups of culturally deprived youngsters in Syracuse according to their level of integrative complexity, teachers found that the groups of low complexity had extremely grave difficulty in carrying on discussion. A discussion technique simply was not appropriate for individuals who view the world as fixed and rules as unchanging and permanent. On the other hand, individuals of moderate structure who were engaged in delineating themselves sharply from authority were very easy to engage in debate, although the debate was terribly vigorour and difficult to control.

In other words, for optimal growth in complexity, the student needs to be exposed to an environment which is matched to the characteristics of his world. An environment in which a complex individual will flourish would create unbearable stress for a person of low complexity. There are considerable implications here for educational theory and practice. Many theorists, for example, advocate democratic-process teaching and even Rogerian methods of teaching for all learners.(6) Under conceptual systems theory, however, we would postulate that Rogerian teaching methods could even be threatening, stressful, and possibly even destructive if they are applied to individuals of very low complexity, although they might be optimal for individuals of moderate to high complexity. The consequence is that some kind of differential training model has to be built and put into effect of the kind, perhaps, that Hunt has described in a recent paper.(7)

Hunt's research on the Upward Bound programs in the United States validated the position that personality and training environment should be related. Hunt examined a sample of Upward programs and found that where environment and trainee personality were matched (high structure with low complexity and vice versa) the greatest growth took place.

The third task is to provide environments that will help individuals become more complex, and the hypothesis that makes the most sense at this time is to attempt to lead to the person's present state of development slightly; that is, when an individual is at a low level of complexity, one would want to have a moderate amount of complexity in the environment, but not too much. The tasks presented to the individual, for example, should be done in such a way that there is some negotiating about rules, but not total negotiation, as for example under Rogerian conditions.

The Model and the Child

To relate to the child's real world, then, the teacher needs to discriminate his level of complexity and attempt to create an appropriate training environment. A rigid child constructing a rigid world by unchanging rules needs a different environment in which to carry on his tasks, and especially needs a different environment if he is to grow than does a person who can construct alternative, flexible worlds where rules are negotiable and interdependence is the normal way of life.

In other words, democracy is not simply a matter of learned content. To live democratically means to develop a personality which can behave democratically. If we are truly to generate through our teachers a world of participation democracy in which people of all walks and persuasions negotiate in direct confrontation, or if we are going to develop citizens who will create at the international level a new and more sane world, then the teacher's role is to help build more flexible personalities. To do this he must understand the processes by which his learner constructs reality and enter into that process to improve it.

A Model for Analyzing the Real Social World

Searching for a model which could function to relate the teacher to the social world as well as Harvey, Hunt, and Schroder's model relates the teacher to the real world of the child, I found myself wandering through anthropology, political science, and sociology, hunting for models which characterize, or perhaps better conceptualize, this wild social world of ours. Each of the models of the social sciences, however, belonged in our third category -- "the real world of the disciplines." I found myself turning more and more to the social philosophers, and decided finally to extrapolate from the work of a number of this group and create my own synthesis.

Chiefly the debt is to the work of Robert Hutchins, particularly to his notion that the fundamental characteristic of a democracy is that all men are governors, and that the inescapable conclusion which we must draw from that is that all men must be educated to be governors.(8) So we cannot, as Plato might have wished, draw the elite into orbits of education specially reserved to prepare them to be our philosopher-kings. Another debt from Hutchins is the notion that the proper education of the governors is his participation in the continuing dialogue on the good life which began with Socrates and which continues today in the works of our most thoughtful men. Note the choice of the word participation. The governor is not simply prepared _to_ participate; he is prepared _by participating_. The dialogue must become a part of his being. He must engage in the negotiation of the social world. This negotiation is the process of government.

Another source of debt is the Spanish philosopher and sociologist Ortega y Gassett. In his little book, The Mission of the University, published almost forty years ago, he stated that the fundamental purpose of a university education was to enable men to live at the level of the highest ideas of their times. I find this challenge moving in its simplicity and humility. In the first case, it forces us to acknowledge that successive generations will surpass us in wisdom, and that ours is part of the negotiated life on which others will build, no doubt, better. In the second case, it makes specific the application of academic knowledge to the real social world. "To enable men to live..." means involvement in the social forces and movements of one's own time. Although Ortega spoke directly to the university, the charge seems appropriate to all of social education, from the early years onward.

My third creditor is Herbert A. Thelen of the University of Chicago. Thelen's Education and the Human Quest(10) is a ringing declaration of group investigation as a necessity of intelligent social life. It is interesting that Thelen, as do Hutchins and Ortega, mentions the Greeks as models for our own day. He states, "It seems very clear to me that the unshackling of education is closely intertwined with the reconstruction of a way of life in which each community seeks to establish and reinterpret broad and enduring purposes as it tries in all its functional systems to live in accordance with its purposes. Education is simply the name for that part or aspect of all community life which is responsive to the demands of human nature, social interdependence, and societal goals; which seeks to relate these meaningfully to a sense of larger purpose and thus find significance in the great adventure of Man On Earth."(10:219) *From Thelen I draw this sense of common inquiry* into social life -- to comprehend it and to make it better.

A Simple Model

In the first place, let us look on the society itself as a process of negotiation, albeit accomplished partly by confrontation and the use of naked force, both economic and political. Let us look into this negotiation and see the possibility for dialogue in which each force and each interplay of forces can be looked on as the beginning of a proposition about action which can be debated and analyzed. Let us in the second case look on the arena of negotiation as a web of interacting and interlocking belief systems in which individuals live largely locked inside their frames of reference, struggling to reach out and build bridges between their conceptions (their real worlds) and those of others (some so they can control and exploit, others so that they can join with and create). In the third case, let us defeat alienation. Let us look on the prospect that human destiny will be determined by mindless clashes of social forces as the ultimate horror. That we should accidentally drift again into a model of National Socialism, such as we saw in Germany during the '30s, or that we should drift into nuclear holocaust, or that we should create a brave new world by successive accidental increments of automation and cyber-cultural exuberance, are all diasters. The process of negotiation, the creation of dialogue among previously isolated individuals are simply prerequisites to man's control over his social destiny.

In order to overcome the alienation of the times, we need to develop empathy for our fellows and affiliation with them. These are the antidotes. For if we permit alienation to rule us, then the mindless concatenation of social forces will indeed shape our destiny, willy-nilly.

What tasks for the teacher, then? First, to engage his students in everlasting dialogue about the nature of the human social life. Second, to engage with them in the study of the continuous interaction of social processes from the real, going-on world. Third, to engage with them in activism to demonstrate that they can be efficacious. Fourth, to help them affiliate with their fellows in their quest for meaning, in their attempt to be usefully related to their society.

To those who say, "But how do you do this given the limitations of the school?" I can only say that if your school limits these kinds of activities, then you do not have a school at all, but you have built something else. If you begin with the premise that the business of education is to take an antiquated institution called a school and attempt to warp it in such a way as to enable one to teach children inside it, then you begin with an intolerable burden. Let us begin instead with the conception of the real social world and how the teacher and the child can together relate to it, and out of that conception, let us build something and then perhaps rename it a school.

Do dialogue, the study of the real social life, activism, the search for affiliation, and the learning of empathy begin in the primary grades? The answer is of course they do. And how are they taught? The answer is that they are "taught" less by instruction than by the nature of the community social system which is created inside of the school. If the school is a place of dialogue, a place of study and attempt to comprehend the contemporary world, -- if it is a place where, in the corridors and the libraries and in small groups gathered around not so small problems, children inquire bravely and emotionally, into the nature of their social life -- if it is that kind of a place, then it will achieve its social purposes. If it is the kind of place where people affiliate one to the other, learn to feel the problem of the other, and try to search with the confused other, in that case the teacher and the child have a reasonable chance of relating to the real world of society.

The Social Sciences: The Processes of Constructing Knowledge

A basic element in a model which can build bridges between the child and the disciplines is the notion that the disciplines are knowledge factories, places where knowledge is put together out of the raw material of experience. This assumption that we construct knowledge rather than find it lying around, that what we do is create a conceptual world rather than absorb one, is so central to all the current social and behavioral sciences that it must be a cornerstone of any attempt to relate the child to the real worlds of academia.

It would not be unwise, then, to teach the child about the model-building processes that go on in the social sciences, about the attempts to formulate conceptual systems that describe and explain social behavior. If social science instruction focuses on the model-building properties of the disciplines, then it will have great power. For it is in these models that we find the greatest explaining power that the social sciences have to offer the mind which would understand the society. In the second case, teaching the models offers great economy, for it is in the models of the social sciences that we have the core of the structure of those disciplines, and if a few of the models are taught, much of the remainder can be constructed in relationship to them. In the third case, if the models are taught, then the construction process has to be taught also. If one studies, for example, the conceptions which George Homans(11) uses to analyze the face-to-face human group, then one studies perforce an example of the process by which knowledge is constructed in psychology and sociology. Last, models from the social sciences are academia's best tools for helping the child mirror and relate to his own real world and analyze his society and relate to it. They are the overarching conceptual bridges that we can use to bring the child's world, the real raw world of social life and the power of disciplined thought together.

Be it then proposed that models be selected from the social sciences and systematically taught to the elementary school child in such a way that he can see how they were built, how they are tried on to real social situations, how they grow and are altered as knowledge increases, and how he can use them to comprehend his own experience and to solve problems with their assistance.

To do this, of course, the child has to function as a model builder, and so does the teacher. The role of the teacher becomes one of selecting and helping the child try on conceptions out of the social sciences.

The child should be continuously exposed to models that operate in three domains. He needs to learn a model which can function to help him analyze society at the inter-personal level, that is, he needs a model drawn from small group sociology or from social psychology. In the second case, the child needs a model which will help him to analyze society at the community or urban level--models which can help him to analyze the demographic composition of urban populations, the economics of the community level, the politics of community life, and so on. Third, the child needs to learn models for analyzing society at the macro level--that is, the child needs models from anthropology and other disciplines which provide for a comprehensive view of the many dimensions of both primitive and complex societies.

Presently, of course, there are many projects in the United States which are attempting to develop models from the social sciences in forms that will make them accessible to children. Very few of these projects, however, meet the following criterion: The indispensable condition of learning to use, reconstruct and apply models is the live business of studying the social world with them and trying to solve social problems using them. What is required is a day-to-day study of society with the help and guidance of a teacher who is in direct contact with the learner. We can no doubt teach the conceptual systems of anthropology perfectly well through instructional materials rather than through the offices of teachers who are in direct contact with the learner, but to program the process of model reconstruction seems very unlikely. This is a teacher-mediated job.

Summary

The real worlds of social science education, then, come from three sources. The learners form one source, and the teacher who would reach the learner's real world will find a busy conceptual system that he must comprehend and enter. The society is the second source, and to reach it one must comprehend the interaction of forces busily shaping the future and find a way to bring the child into the dialogue--in fact, to help him learn to create one. The disciplines are the third source, and their real worlds are contained in sets of conceptual models which apply to three levels or domains of social activity. To enter those worlds, the teacher (and the learner) must enter the process whereby they are vreated and applied.

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Appendix: Chapter Eleven

Curriculum Reform Strategies in the World Affairs Domain

by Bruce R. Joyce
Teachers College
Columbia University

To bring about any large-scale curriculum reform is very difficult. The task of curriculum reform becomes almost impossible in an area which involves societal values which are very sensitive. That is society considers some values especially important and they are carefully protected. Whenever instruction nears those sensitive areas, obstacles appear. A host of quiet forces arises to diffuse the threat and render it harmless. Such is the problem in the World Affairs domain, for the discussion of foreign policy or other aspect of world affairs includes one or another of the social values which we must classify as highly sensitive. Hence, any reform will require really potent means of effecting it.

The development of a curriculum reform strategy needs to take into account the actual obstacles to curriculum reform and be designed to overcome them. Many curriculum movements have been ineffective because the designers too quickly assumed that a curriculum change was simply a matter of teacher re-education or could be accomplished through the production of new instructional materials or any other of a number of logical, difficult, massive, but over-simple strategies. This truism is especially striking in nonsensitive academic areas. A good example is mathematics, where we find that the earliest essential formulation of the "New Math" occurred in 1830, and that the effort to bring more respectable mathematical ideas into the curriculum is still going on, with even the enormous reform movement of the last ten years producing only modest results so far. In the more sensitive areas, like intergroup relations or foreign affairs, the need to use appropriate curriculum reform medicine is multiplied many times.

The substance of this paper deals with the development of a curriculum reform strategy to implement learning activities related to the foreign affairs domain. The procedure is to define the principal objective in foreign affairs education, to identify the principal obstacles to the achievement of that objective, and to suggest reform strategies which are designed to overcome the worst obstacles and capitalize on the forces that will most readily contribute energy to the enterprise.

Definition: The Operations of World Perspective

We begin with a definition of one pivotal objective in any education that would help the student examine the affairs of the world and the development of foreign policy by his national government. This objective should be regarded as one example of a class of pivotal objectives in the area. They cannot all be identified here without devoting the entire paper to the business of identifying objectives. However, we cannot meaningfully discuss curriculum without some definition of curriculum goals. Perforce, we use one broad goal as our examples of purpose. The goal is that the student be able to see human relations from the perspective of world citizenship, of membership in the total community of men. This perspective is not dichotomous with the perspectives of local and national citizenship. It simply provides one important vantage for viewing human affairs.

The perspective of world citizenship involves an identification by the student with the rest of humanity. The student must see other people all over the globe as real, and their concerns as important and legitimate just as his are. This identification is an intricate and complex thing. It is worthwhile to see it in terms of the several social sciences. Geographically it means that he sees the network of world interdependence and influence. He learns that the exploitation and the conservation of resources is not simply a local or regional affair, but a global affair as well. Economically he sees not only the processes of community and national economic interchange, but the networks of international interchange as well and perhaps more critical the moral and practical consequences of the actions of men everywhere on man everywhere else. He begins to see not only the structure of international economic relations and institutions, but the consequences and obligations of world economic linkage. Anthropologically our young citizen begins to see the interplay of the earth's cultures. He notes the processes of cultural conflict and interchange. He sees too the gradual formation of world culture. He notes this and the spread of cultures in the acquisition by one of what another has to give, and he understands the processes of communication which come about when people who have been locked within their own reach outside of both and form a new linkage across the globe. Sociologically he sees the processes of assimilation and accommodation in the institutions and behavior patterns of the people around him, and he is able to identify the processes by which people are absorbed into the perspectives of their time and place and the processes by which this time of theirs socializes them to the global. Historically, our citizen sees the sweep of time as peoples all over the world have formed and reformed their heritages: mingled them, suppressed them, and found identity in them.

A world citizen, then, is a many-sided fellow, and his life is complex, for reasons that are internal as well as external. When he focuses on a problem he can be censored from his parochial perspective and identify if only temporarily with the perspective of many other levels of engagement. As alluring a characteristic as this seems, there are many forces that resist its actualization through public school curriculum and instruction.

The Forces of Resistance

When we are striving against odds to achieve some goal, it is often nice to identify an enemy - someone or some organization who is working against us and against whom we can direct our frustration and our lances. In the case of obstacles to the achievement of the perspectives of world citizenship, we are going to be diappointed, for the most part. For, while there are some pressure groups and individuals who work against foreign policy education[1], the most potent negative forces are generated by natural, even mindless factors that are deeply rooted in the society and the school.

The Countervailing Influence of Political Socialization.

As a child matures, he absorbs the perspectives, including the values and attitudes, of the social milieu within which he is raised.[2] Put another way, his society takes hold of him and imbues him with its ways of thinking and feeling. This process results in different political and social values, depending on the culture and the specific group of people who surround a person as he matures.[3]

At the present time in the United States, the perspectives that are transmitted in most families do not include a world view. Nearly all American adults have some difficulty with all levels of citizenship, tending rather to be privatistic and, moreover, many of those who do have local and national perspectives still have great difficulty with the international sphere. As a result, both parents and teachers tend to imbue the young with parochial rather than inter-national ways of viewing things. Moreover, the teachers as participants in this process are themselves lacking in the perspectives of world citizenship. They, children of their culture, are busily making other children of the culture.[4]

Present international events and the current national entanglement with the entire social world may change the situation, of course, and world perspectives may gradually develop in the mainstream of American life.

For the present, however, it must be recognized that political socialization in the United States, while it provides perspectives for local and national citizenship, does not provide international perspectives for a large proportion of American children. More critical, probably, is that teachers are not socialized to an international view. It must be remembered also that the differentiation of social attitudes occurs during the elementary school years, so that curricular efforts are most critical during that period.

The Tradition of Taboo Areas in Social Studies. Over the years the American School has protected areas of critical political, economic, and social values by keeping them closed to inquiry by students. The development of closed areas has by no means been entirely a conscious process, nor has it been part of a nation-wide conspiracy. The natural processes by which social taboos form have been operating. To the teacher in the classroom, it has simply "not seemed right" to deal with many things with young people.

A few years ago Hunt and Motcals identified six of these areas: economics, race and minority-group relations, social class, sex, courtship, and marriage, religion and morality, and nationalism and patriotism[5]. Several of these, of course, are intimately connected with any study of world affairs or the attainment of any of the perspectives of world citizenship, especially economics, intergroup relations, and nationalism.

At this writing, there are some signs that the closed areas are opening up somewhat. (They have always been open in some classrooms.) But still, especially in the elementary school, many areas are customarily avoided. Any curricular effort needs to anticipate that world affairs, foreign policy, and the perspectives of world citizenship will be unfamiliar intruders in the elementary school world, and far from familiar acquaintances in the secondary school.

The teacher's fear of corrupting the children contributes to maintenance of the closed areas. John Gibson and his associates have pointed out that teachers and many other citizens are often reluctant to discuss undesirable behavior (crime, dope, sex, communism) with children because they fear that the children will be encouraged to engage in the inwanted behavior. To discuss dope addiction, for example, is regarded as possibly legitimizing it, or "giving the wrong idea". To deal with race prejudice is seen as encouraging it. For many years it was a widespread belief that to teach about communism was to make children liable to seduction by it.

In the present case, there is a good possibility that teachers will avoid exposing children to the global perspective because they are afraid that it will encourage anti-patriotism. This fear will probably be subliminal. Instead of being controlled by the advantages of multilevel perspectives on social relations, the teacher will more likely be dominated by his role as surrogate of the national society. Particularly this will be true because the teacher himself was most likely not socialized to world perspective as a child - it is alien to him, in many ways.

Perhaps most important for our purposes here, the teacher's fear of corrupting the child occurs most intensely at the elementary school level, because the children seem more vulnerable and impressionable there. (And indeed they are!) Hence, it inhibits world affairs teaching precisely where it could have the greatest effect.

The unstructured nature of the field of world affairs. Whether we examine international law, or the social sciences, or the position papers of the state department, or any of the other sources of information and ideas in the world affairs domain, it is evident that there is still no clear and readily-defined set of structural ideas or methods of inquiry which are used in the field. Many critical areas of national and international interest are confused and informed opinion is hard to come by. This unstructured state combines with the emotionality with which many international problems are approached to create a situation in which rationality is hard to come by. Further, the more instructured a situation, the greater latitude there is for social pressure to operate on judgment.[7]

Hence, approaching the persepective of world citizenship is difficult. Stances for facing problems of national vs. international loyalty, for example, are not well worked out. Not only in the public mind but in professional circles as well there are few paradigms for examining issues cooly and gaining independent sources of information.[8]

Put another way, because the content of foreign affairs is not yet represented by a structure of ideas. Through systems analysis and other devices models are gradually emerging, but the bulk of the field is amorphous, and this makes the development of curriculum a treacherous business.

The Inductive Teaching Problem. In any area which involves social values when the development of curriculum is discussed publicly, there is quick agreement that no one wants to brainwash the young - to hand him a ready-made set of ideas and values. It is an easy step from that position to the recommendation that instruction be carried on inductively. "We'll show the kids the world perspective," the argument goes in our case, "and then let them form their own ideas." Thus seduced, one proceeds to develop inductive teaching strategies and back-up materials. So far, so good.

Then, the trouble begins. One is rudely reminded that the teaching styles of most teachers do not adapt well to inductive teaching procedures. Whether one looks at teaching from the stance of Bellack,[9] Flanders,[10] Medley and Mitzell,[11] Hunt and Joyce,[12] or anyone else who has studied teaching with contemporary research tools, the answer has been the same. Most teachers work with directive, recitative or lecture styles, and these styles are persistent and difficult to change. Only the application of the most advanced training methods has any effect, and that often for only a small percentage of the teachers.[13] The majority of teachers, even with advanced assistance can teach inductively only part of the time.

A curriculum reform, then, which depends entirely on inductive teaching will almost surely fail. A reform that is accompanied by very powerful teacher training can use limited inductive strategies for some purposes.

Fortunately, there are many teaching strategies which do not brainwash. Many films, lectures, and books, for example, are constructed so as to lead and stimulate the student without controlling him.

The plight of instructional materials. The serious state of textbooks in the social studies is well known and much commented on. In the area of foreign affairs the situation is still nearly desperate,[15] although it is slowly improving for the older children.[16] The materials developed at Carnegie Tech and Northwestern University provide handles on the study of comparative economic and political systems, and the Lincoln-Filene project[6] on race and culture are a beginning at the elementary school level. The first materials to appear from the High School Geography Project are very strong and imaginative. The Inter-nation Simulation is a good beginning to the use of gaming in the area. The situation is so severe in the lower grades that any decent exploration of global perspective is seriously disadvantaged and this characterization remains essentially true in the high school except for the academically talented students.

Obstacles Real and Mythical. The obstacles above identified are real and are imposing hurdles to curriculum reform in the foreign policy domain. They can be overcome, however, and the means are readily identifiable, provided that one does not succumb to obstacles which are products of his imagination. To hint at a few, by stating them positively.

The textbook industry can change. Television teaching can be effective and involve even young children. Teachers can learn to operate in a scholarly way. The public will stand for foreign affairs teaching.

The problem is to select a strategy.

Elements of Curriculum Reform

What can bring about curriculum reform where the objective is to help the student apply the strategics of the social sciences from the perspective of world citizenship - to slice reality as if he were closely identified with all mankind and to analyze human relations from that point of view?

Let us approach this question first by identifying the substantive elements of curriculum reform - the clusters of institutional behavior that add up to a major curriculum change, and then by speculating on procedural elements - prongs of a strategy that will have a reasonable chance of overcoming the obstacles we identified earlier.

The substantive elements of curriculum reform. To bring about a large-scale curriculum reform is to try to reshape a large and unwieldy institution. While there is no solid agreement on the things that constitute such an educational change, there probably would be no great disagreement with the following: a rational plan has to be formulated that specifies ends, means, and support systems;[17] a system has to be developed for implementing the plan; and an on-going organization has to be developed to take over research, evaluation, and materials - development functions to improve and maintain the reform.

Each of the obstacles which were identified earlier can be seen in terms of the three substantive tasks above (curriculum planning, curriculum implementation, and curriculum research and maintenance). The process of curriculum reform can be shaped in terms of strategies designed to overcome the specific obstacles.

The Political Socialization Problem

All three curriculum tasks are affected by this one.

The curriculum plan should draw heavily on the social psychology of attitude formation. It should be recognized that to induce global perspective is to affect deeply-ingrained attitudes. To aim at information or ideas alone would be to fail surely. The dynamics of attaining global perspective are probably similar to those in intergroup education - the development of an attitude requires information, the learning of systems of inquiry into the attitude itself, and an opportunity to examine one's emerging position.(2)

Curriculum implementation is related to socialization factors because of the problems inherent in the teachers' sociolization. For one thing, it means that implementation through the mass of teachers is very unlikely to succeed without a truly enormous expenditure of money and effort. It is probably far wiser to develop a curriculum plan whose implementation, at least in the early stages, is through film, television, and the written word - media through which a few skilled teachers can reach a great many students and, gradually, to be sure, affect many other teachers.

Research, evaluation, and maintenance. Although much is known about what will not affect the perspectives people bring to problems, very little is known about how people learn or can be taught perspectives. A systematic research and development effort is required to reshape and strengthen any curriculum strategy.

The Tradition of Taboo Areas

To open up the taboo areas of teaching the curriculum plan has to be very clear and easy to administer. Teachers, parents, and school officials will need to understand what changes are being made and why. The means-ends relationship in the curriculum plan needs to be particularly strong, because the tendency to reinstitute the closed areas is very great. The curriculum strategy cannot depend on large numbers of teachers, because they will be prone to resume their traditions.

Implementation, for much the same reason, needs to rely on mass media, easy-to-administer instructional materials - once again we find ample reason to plan implementation so that a few highly-skilled people operate through media that gives them great impact.

Research, Evaluation, and Maintenance. Again, little is known about opening the taboo areas of the social studies. The recent research by Oliver and Shaver[18] and Gibson and Grannis[6] has made a beginning on which we can build. The first steps in a serious curriculum reform that treads on the taboo areas are bound to be halting. An enormous research effort will be necessary.

The Teachers' Fear of Corrupting The Children

This obstacle is most pertinent to classroom teaching, although it provides more reason why a reform strategy that overly depends on large numbers of teachers, especially in the early stages, will probably fail.

Curriculum Plans need to stress ways of promoting objectively using the methods of the social sciences. This will show teachers how to handle what will conceive to be sensitive areas in ways that stress analysis rather than the emotional content of the study of foreign affairs. Teachers are more likely to understand how to apply the global perspective to the study of, say, economic aspects of world organizations than they are to approach the value questions of national sovereignty with any equanimity.

Implementation needs to feature demonstrations of ways of applying social science frameworks to the world affairs domain. Especially the weaker teachers are put off by delicate subjects and unfamiliar ones. They need to see clearly how difficult questions can be approached through analytic frameworks.

Research and Evaluation should focus on the effects of teacher training. Some careful case studies are needed on how to help teachers approach the sensitive areas.

The Unstructured Nature of the Field

Curriculum plans are generally incoherent unless a well-structured academic source provides content and intellectual vigor. To make a comprehensive plan in the world affairs domain requires that a working structure, however temporary, be laid on the field. The work of Oliver is illustrative here, for he has demonstrated how one can go about deriving an analytic structure (for analyzing public issues, in his case) and building a curricular system around it.[18]

Implementation will depend heavily on teaching that structure to the persons who create the media systems and develop training programs for teachers. Many of the earlier-described obstacles will not be overcome unless this structure is well-articulated, because the emotional tendency to avoid the critical issues will dominate, unless a strongly rational avenue is provided.

The implications for research are probably obvious. As a structure is developed, it can be tested and reshaped until a viable curricular system can be built around it.

The Inductive Teaching Problem

The Curriculum Plan if it is realistic, will develop several teaching strategies. Some of these will capitalize on the things the average teacher does best. Others will use the talents of a few who reach their students through media. The realistic curriculum plan will not call for the mass of teachers to learn reflective teaching procedures in a short time.

Implementation of any inductive teaching procedures, hence, must be intensive and highly professional. Unless an agency is willing to pay a huge price, it will organize implementation so that demonstrations through television and film carry much of the burden, rather than "institutes" and "workshops". A disproportion of the budgets of the large curriculum projects has been used in teacher training from which the results are relatively small. A curriculum plan which uses integrated media systems for its major thrust is far more practical and likely to succeed.

Instructional Materials

Curriculum plan. Far too many plans have required personal teaching strategies; that is to say, strategies requiring direct teaching by many teachers. These strategies in turn depend on scarce teaching materials, which has plunged the curriculum project into massive production of instructional devices, many of which are felt to be misused. It is far wiser to develop integrated media systems in which personal teaching is only part of a whole that includes direct teaching via film and television and self-teaching by many means. A total system props up the weak teacher, provides children with greater independence, and can always be transformed by the strong teacher. By using masterful teaching over appropriate media, it assures many students a quality of teaching they could never receive directly.

Research and evaluation, however, would be a heavy component. We have yet to see a really first-class, multi-media curriculum reform in the social studies. There are many interesting models, however, in the modern foreign languages. Joyce and Joyce are beginning to develop models and an empirical base in the social studies.[19]

A General Strategy

The salient features of a comprehensive reform strategy, then, are: to lay a solid intellectual structure on the world affairs domain (a la Oliver and Shaver in the public issues domain[18]); to develop a comprehensive curriculum plan that could serve as the guide for the construction of multi-media man-machine system[19] for teaching, with some teaching-through-media. The implementation of such a system would be difficult, but much less so, than systems depending on personal teaching alone. Further, they would guide teachers and schools into the until recently taboo areas and show them how to handle sensitive areas without either corrupting or brainwashing the children.

The entire process would have to be constructed with reference to the psychology of socialization and attitude formation because foreign affairs education is confounded and complicated by being entwined with the international political socialization of the young.

References and Footnotes

1. A thorough, if somewhat polemical, description is given in: Mary Ann Raywid. *The Ax-Grinders* (N.Y.: Macmillan, 1954).

2. See, for a review of the literature on enculturation as it affects the teaching of the social studies: Bruce R. Joyce. *Strategies for Elementary Social Science Education* (Chicago: Science Research Associates, 1965), Chapters Six and Seven.

3. The research of Easton and Hess is interesting in this regard. David Easton and J. Dennis. *Political Socialization of the Elementary School Child* (Washington: National Council for the Social Studies, 1966 Yearbook).

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4. There is ample evidence that teachers represent the norms of the society, but that their range of beliefs is somewhat less than the usual range in the population. See, for example: David Ryans, editor. *Characteristics of Teachers*.

5. Maurice P. Hunt and Lawrence E. Metcalf. *High School Social Studies: Problems in Reflective Thinking and Social Understanding* (New York: Harper, 1955).

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16. For a general overview, see: John S. Gibson. The New Social Studies (Tufts University, Mimeographed, 1967).

17. For one paradigm, see the products of the National Education Association's Project on Instruction, Ole Sand, Director. For instance, Planning and Organizing Instruction (Washington: National Education Association, 1963).

18. Donald W. Oliver and James P. Shaver. Teaching Public Issues in the High School (Boston: Houghton Mifflin, 1966).

19. Bruce R. Joyce and Elizabeth Joyce. Data Banks for Children: Development and Initial Studies. Teachers' College Record (in press).

Chapter Twelve

The Innovator

Our goal is to produce a teacher who is an innovator. With other teachers, he will work to maintain the important educational institutions of the society. But what would distinguish him from the average is not only his competence but his capacity to participate in the creation of new educational forms. If we are successful he will innovate in the day-to-day sense that he will bring spontaneity to everything he does. He and his students will recreate subject matter rather than master the content of others. They will find their own way while referring always to the way of others. But he will also find his expression in the development, with his colleagues, of new ways of facilitating the development of children. He will know how to teach himself and he will want to teach himself and he will know how to help other teachers learn and he will enjoy the colleagueship of innovation.

Were this simply a technological matter, it would be a simple thing and we would not need this component. But innovation is extremely complex in both the personal and interpersonal sense. New things threaten all of us to some degree and to force ourselves to create new things--better still not to force ourselves but to gravitate toward the creation of better lives--runs against our tendency to hide within our safe and familiar domains. To increase our capacity to innovate means to open our personalities so that we bring greater flexibility to our professional problems and are dominated by our sense of adventure rather than our need to preserve our familiar lines of operation.

In the case of professionals who operate within large and traditional institutions (as teachers do) the interpersonal aspects of innovating are as complicated as are the personal ones. For one thing, a teacher who innovates only by changing his own behavior will not make much of a difference in a school where there are twenty to thirty teachers and four hundred to eight hundred children. In fact, by only changing his own behavior he may find that what he has done is to make himself less effective by developing work patterns which are at odds with those of the majority of the people operating in the environment. The innovator in the social institution has to learn how to bring other people along, people who have ideas of their own about how to run the school and who can get pretty upset if they have to learn new ways of behaving. Not infrequently, they come to resent the people who are initiating the new and uncomfortable activities. More serious is the problem that is caused by bureaucratization within social institutions. A characteristic of large nation-wide organizations is that roles become routine and stable. Partly this is in response to the enormous size of our society and the need for personnel who can step into jobs on short notice and perform in reasonably predictable and standard ways. For example, New York City hires over 50,000 public school teachers and each year they are distributed among about 1,500 schools. In the last weeks of the summer a very large quantity of teachers decide not to teach, or their husbands are transferred to another city, or they fail to pass a course or complete a course which is needed for certification. This city, as all large cities, engages in a rather mad flurry of activity in which it finds personnel who can take the places left vacant. The miraculous thing, of course, is that they do find people who can come into the schools and begin to operate. Not everyone would be satisfied with the level of operation, but considering the enormous quantity of people who are involved the fantastic thing is that the school goes on as a social institution. Even in areas where the pupil population has completely changed within a year and where sixty or seventy percent of the teacher population is changed, the school is amazingly similar to ones in which the pupil and faculty populations are relatively stable.

The reason for this is that nearly everyone all over the country knows what a teacher's role is. They know what he is supposed to do and how he is supposed to do it. Reasonably well educated people can, to an astonishing degree, step into teacher roles and begin to fulfill them in a very short time. The role, in other words, has become routine enough and standard enough that it is well known and intelligible within the society. Now if it were to happen some year that all the new teachers, as they came into the schools, tried to be something *else* than fillers of roles, these people might well be unintelligible within the school system.

In other words, the bureaucratization which serves to make it possible to operate highly complex organizations in an era of shifting personnel and fluctuating need for them, also serves to make it very difficult for any personnel who do not smoothly play the bureaucratic roles to function within the system. Furthermore, changes in the roles of personnel from the usual bureaucratic ones to ones of innovation can be seen as threats to the stability of the social system of the institution. The result of this can be that those people who are responsible for maintaining the stability of the social institution can develop a tendency to squelch innovative activity. (See Smith's fascinating study of a school faculty opening an experimental school. He tells the tale of extreme interpersonal discomfort on the part of individuals and groups of individuals who are attempting to delineate non-bureaucratic roles and carry them out.)[1]

Another serious problem arises from the fact that bureaucratic roles originate to protect the stability of the institution. Hence many aspects of the bureaucratic role are often only indirectly related to the fundamental purpose of the institution. We need only to interpret some commonplace occurrences in the schools in terms of bureaucratic behavior to see the extent to which this is true.

For one example, let us look at "grade standards" in the school. As soon as the textbook industry was well enough established that it could insure a flow of textbook materials to the schools these textbooks were "graded" so that some material would be presented to the young learner and different material would be used as he grew older and so on until his education was complete. There were reading books, for example, to begin reading on, others to further ones reading ability, and yet others to make it more sophisticated and stabilize it at a mature level. All this is well known. In schools it became the practice to start people at the beginning and, year by year, introduce the more difficult material. Children, of course, were not made to the same specifications as the textbooks so that many materials are given to children who do not need them and others receive material which is impossibly difficult for them. Yet many teachers continue to administer materials to the children in this way. *The older children get and the greater individual differences are, the more standardized is the administration of standard courses.* Furthermore, the teacher who has to deviate from the traditional content and skills of any one grade can come to feel very guilty. He worries for fear the children will not be prepared for the next year, for example. Indeed there is a strong tendency for the teachers of older children to blame the teachers of younger children for any diversion from the traditional pattern of achievement. They pressure the teachers below them to favor institutional stability, press the students toward "Standard" levels of achievement (At the expense, of course of teaching so as to maximize the learning of each student.) Conversely, there is very little praise for teachers whose students are prepared *above* the expected level. In fact, exactly the opposite can happen. It is not unknown for junior high and high school teachers to complain that students have already covered material that they intended to teach.

In some states, such as New York State, this entire bureaucratic phenomenon of grade placement of subject matter has been made "official" with the administration of standardized tests such as

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[1] Louis Smith and Pat Keith, *Social Psychological Aspects of School Building Design*, Washington University, St. Louis, 1967. (OE Report S-223)

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Regents Examinations on the basis of which significant decisions in the lives of children are made routinely.

The purpose of this illustration is not simply to complain that individual differences are not cared for in the schools. It is to describe the practices of standardized education as bureaucratic practices which have been instituted to stabilize the institutions. (Although, invariably, they are ostensibly for educational purposes.) The problem we are concerned with arises when a teacher candidate finds out that he is learning to play bureaucratic roles. Since many of these roles do not facilitate learning by children, a severe conflict can arise in the candidate. Young teachers come to us in moments of great conflict saying that "I am teaching stuff they don't believe in but I have to because of what will happen to the children if I don't." Increasingly as the teacher finds himself in this conflict, he experiences a phenomenon which Weinberg has described very well for us in his position paper on this problem. (Appendix to Chapter 12). That is, the teacher finds himself with an aspiring educational self which is in conflict with the bureaucratic roles that he is taking on. In short, when he finds that the school is a bureaucracy, he tends to suffer acute feelings of alienation, both from himself and what he regards as "the system."

Unless we can bridge this conflict between learning bureaucratic roles and learning the roles of "real teacher", it is very unlikely that the teacher will be able to carry out extensive innovation. The alienation may drive him out of teaching, as it does so many fine young people. Or, he may resign himself to the bureaucratic role and become useless as an innovator. It is to this problem that this component addresses itself. We have to develop a program of activites to increase personal flexibility, willingness to adventure creatively with others, and to teach young teachers to understand the bureaucratic nature of the school and to develop interpersonal relations and personal orientations that will enable them to overcome the alienating effects of bureaucratization.

The Processes

The processes involved in innovating are partly technical, but those are not the subject of this component. The technical processes are those of institution-building and interactive teaching. These are dealt with in Chapter Ten and Eleven. The concern here is the processes by which the person frees his ablility to create and to venture into new terrain, overcoming the threat to himself and the discomfort of changing his ways. This is the personal aspect of innovation--the processes of personal creativity and inner strength. In addition there are the interpersonal processes of innovating. These are the processes of understanding the dynamics of social institutions and the mechanisms that they generate to stabilize themselves and which result in bureaucratic roles. The process of understanding how bureaucratization and institutional rigidity

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develop are insufficient in themselves to help the teacher create an innovative personality. He also has to understand how the bureaucratic forces alienate him from the "basic" functions of educating, has to resist bureaucratization and the resulting alienation, and develop a viable situation for the continuous improvement of education. In turn this involves coping with the hostility of those teachers who do learn bureaucratic roles and who resist the processes of innovation and seek to stabilize the institution. The teacher-innovator has to learn how to carry on innovation while providing sufficient institutional stability that it does not overly threaten the people around him. He nees to know that many of his fellow workers are seeking to protect themselves by keeping the institution unchanged. The teacher-innovator shapes innovations such a way that they minimally threaten the stability of the institution but carries them out in such a way that they are minimally blocked by those stabilizing forces.

All of this adds up to a tall order. But, so does innovation in any domain. Enormous institutions like the American public school have so many stabilizing forces operating within them, that innovation is a strenuous process that requires the highest level of skill in shaping innovations and in working with people.

The Behavioral Objectives of the Innovator Component

Just as the processes of innovating are partly personal and partly interpersonal, (although no clear line of demarcation can be assigned between the personal and interpersonal,) the behavioral objectives can conveniently be thought of in those categories. It should be stressed however that personal and interpersonal processes are not mutually exclusive i.e. while one is learning personal flexibility he may also be learning how to pull groups toward greater group flexibility.

Also, many of the behavioral changes involved in innovating, involve personality adjustments which are very slow to come about. Hence, in this kind of area there can be no hard sequence of behavioral objectives which can be achieved one after the other. There are rather general behavioral goals toward which one works slowly and through a variety of means and it is very difficult to establish for evaluation purposes a neat cause-and-effect relationship between particular educational activities and particular outcomes. This is frustrating, but it must be borne with. The alternative is to avoid the area altogether, and that is unthinkable.

The Goals of the Component: Area One: The Institutional Processes

The teacher is able to analyze the social structure of human institutions in terms of the concepts used by Homan In the Human

Group, Parson's The Social System,[1] and Robert K. Merton's Social Theory and Social Structure.[2] He manifests this by being able to describe the school in terms of the concepts used by those theorists and by being able to identify those processes by which teachers are taught the bureaucratic roles of the schools.

The teacher understands the alienation caused in himself when bureaucratic roles conflict with his attempt to teach. For example, when he is assigned to teach something which he believes is worthless to the youngster but which is essential to the favorable evaluation of the child in school.

The ability to attempt to influence the norms of the group, so that they support innovative activity. The teacher manifests this by being able to analyze the discussion among teaching teams in terms of behavior which sanctions and does not sanction innovative activity. He is able to present himself in such a way that he supports innovative activity and reinforces creative attempts on the part of others.

The willingness to experiment and expose the results of the experiment to other people. The teacher manifests this by creating his teaching strategies in such a way that they have evaluation devices embedded in them and he exposes the results of what he does to his feedback team and to his inquiry group and that is appropriate.

Goals: Area Two: Flexibility

An increase in interpersonal flexibility can be defined in terms of changes in cognitive orientation. To use the language of Harvey, Hunt and Schroeder, the person progresses from relatively fixed conceptual linkages to the world until he can gradually negotiate new concepts and responses, can see alternatives and think out alternatives that are different from his own structure, and build interdependent social situations with other people. The behavioral objective then will be stated in terms of progressions through the stages of cognitive flexibility which are described by Harvey, Hunt and Schroeder. For any one student the particular behavioral goals become those of the level just above the level at which he is.

The behavioral objective of this sub-component are described in terms of the four stages in the Harvey, Hunt and Schroeder theory.

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[1] Parson, The Social System (Glencore, Ill.: Free Press, 1951).

[2] Robert K. Merton, Social Theory and Social Structure (Glencore, Ill.: Free Press, 1949).

These should not be regarded as rigid stages nor ones which necessarily are sequential i.e. one does not have to go through two to get to three but a general order of progression *can* be assumed.

The psychologists Harvey, Hunt and Schroder[1] have developed an information-processing view of personality development that provides us with a conceptual handle for looking at the child, exploring his real world, and selecting environments that will be likely to establish meaningful ties with his social environment. Whereas many developmental theories describe personality in terms of attitudes, needs, norms, and the like, Harvey, Hunt, and Schroder describe the structures, that is the programs, or sets of rules, by which individuals relate to their environment. For example, whereas many developmental theorists are concerned with the content of personality development -- with how a child feels about himself -- or the content of his political or social beliefs, the conceptual systems theorist concerns himself with the structure of the system by which the individual relates to himself and his environment, that is, the characteristics of his information processing system.

Thus, their position has some community of stance with the developmental theorists who focus on cognition, as, in particular, Harvey, Hunt, and Schroder focus on the integrative complexity of the conceptual structures. Some individuals, for example, relate to the environment through relatively few dimensions, and those few dimensions are not very well integrated with one another. At the opposite end of the continuum are individuals who view the environment through many dimensions and who manifest a high level of integrative complexity in their relationships to the environment. The number of dimensions with which a person relates is not necessarily correlated with the degree of integrative complexity in his system, but there probably is some relationship, that is, the more dimensions one has, the more likely integration is present. Highly integrated information processing systems have many more conceptual connections between rules, that is, "they have more schemata for forming new hierarchies, which are generated as alternate perceptions, or further rules for comparing outcomes. High integration structures contain more degrees of freedom, and are more subject to change as complex changes occur in the environment."

By the conceptual systems view, therefore, we can discriminate individuals in terms of their amount of integrative complexity. For example, in Figure One, we can see a diagram which illustrates the relationships among rules in situations of low and high integration.

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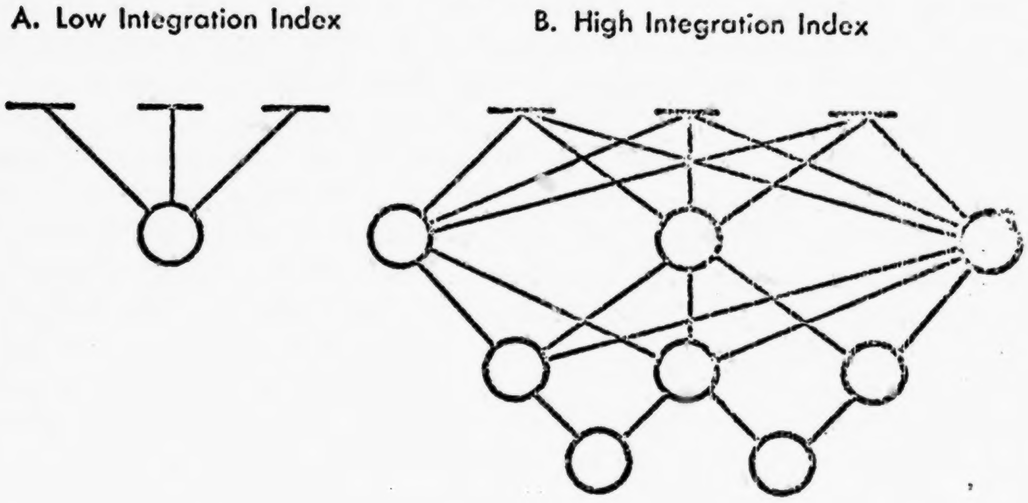
[1] Harold M. Schroder, Michael J. Driver, and Siegfried Streufert. *Human Information Processing*. (New York: Holt, Rinehart, and Winston, 1967).


A. Low Integration Index
B. High Integration Index

Rules are in a fixed relationship so that the whole process can be reduced to one rule.

Rules are in an interdependent relationship; each can influence the other singly and in combinations producing new connections and new rule structures.

Figure One

Variation in Level of Conceptual Structure

The Consequences of Levels of Integrative Complexity

Particular behavioral patterns are characteristic of different levels of integrative complexity. Let us look, for example, at the characteristics of behavior of individuals of low complexity.

"These general characteristics of behavior include:

"1. Categorical, black-white thinking. The discrimination of stimuli along dimensions is minimally graduated; for example, if a person holds an extremely concrete attitude toward Negroes, and 'Negroes' are categorized in a single way, it follows that all Negroes will tend to be lumped into one category (for example, 'bad') and contrasted with others. A structure that depends upon a single fixed rule of integration reduces the individual's ability to think in terms of relativeness, of 'grays,' and 'degrees.'

"2. Minimizing of conflict. Stimuli either fit into a category or are excluded from consideration. There is no conceptual apparatus that can generate alternatives; the result is fast 'closure' in choice or conflict situations. When conflict is introduced (as with the presentation of attitudinal refutation or dissonance), it quickly is minimized and resolved. Theories which argue that cognitive dissonance is followed by strategies aimed at reducing the conflict have validity, particularly in describing the behavior of persons with concrete structure in a particular attitude area.

"3. Anchoring of behavior in external conditions. If a stimulus is categorized in an absolute way, there is a corresponding restriction of internal integrative process, and alternate resolutions or interpretations fail to arise. In structures with a low integration index, behavior is maximally controlled by external stimulus conditions. With increasing conceptual level, alternative perspectives and interrelationships can be generated from the same dimensional values of information. This represents an increase in the concept of 'self' as an agent, a going beyond any single or externally given interpretation, and an increase in the conception of internal causation.

"4. The more absolute the rules of integration, the greater the generalization of functioning within a certain range, and the more abrupt or compartmentalized the change when it occurs. For, example, if a stimulus person is categorized as holding the same attitude as the self, this perception (of agreement) will persist unchanged as the degree or nature of agreement becomes less or more complex. Conflicting attitudes tend to be misperceived or 'warded off' because of the absoluteness of the stimulus categorization and the lack of alternate schemata for 'sensing' shades of difference. In this sense, the perception of the other person is overgeneralized. When a person continues to perceive the world completely in terms of his own schemata, ignoring subtle situational changes and the alternate interpretations of others around him, he is 'projecting. Thus, projection may be considered to be a defense mechanism commonly used by individuals low in integrative complexity. If the changes in the situation exceed a certain limit (which is defined in terms of the conditional rules for categorizing stimuli), the categorization of the stimulus person will change rather abruptly, and he will be perceived in a drastically different way. Another compartmentalized heirarchical set of rules negatively related to the first takes over." (Ibid. 16,17)

Now, let us look at the characteristics of individuals of moderate complexity.

"The major characteristics of this second structural level are:

"1. The presence of a conceptual apparatus that is able to generate alternate organizations of dimensions. That is, if there are three dimensions, such a structure would provide at least two possible rules for combining these dimensions. A given stimulus could be placed at two different points on any or all of the dimensions. For example, a mother helping a child to dress could be coded as 'plus' or 'minus' on a given dimension (such as control) depending on which of the alternate sets of rules the judgment was anchored.

"2. At this level, there is, however, a lack of conceptual apparatus for relating or organizing differentiated rules. In these structures, schemata are related in the most primitive way. The integrating rules loosely specify conditionality; for example, in situation x, weight rule A higher than rule B. This does not involve the simultaneous use of schemata by superordinate rules other than conditional principles. In this sense, once the rule is engaged, a moderately low integration index structure functions much like low integration index structure except that other schemata are available.

"This moderately low level of organization is characterized by the delineation of several alternative ways of structuring the world. Although such conceptual properties are not effective for relating or organizing differentiated sets of rules for decision-making processes, they do usher in the problem of choice and probability. The generation of alternatives or of uncertainty is an important step in increasing abstractness, but at this level the system is characterized by ambivalence. Unlike low-level structure, for which the problem of choice is minimal, moderately low structure generates alternative interpretations without a fixed basis for choice or organization. For example, there is no fixed rule for what is right or wrong . Here conditions affect the choice not only of dimensions, as is the case of structures with a low integration index, but also of schemata.

"One of the most general implications of moderately low structure is that the discrimination of stimuli on dimensions remains relatively constant. That is, since each alternate organization is minimally modified by or related to the other, stimuli are still being 'read' primarily via a single schema. However, the dimensional structure is more complex in the sense that stimuli can be differentiated within a single dimension (that is, can be evaluated at more than one point). It is differentiation of stimulus placement within a single dimension that opens up the developmental possibility of relating the differentiated organizations and furthers the evolement of higher-level structural properties.

"Some of the consequences of moderately low structural properties include:

"1. A movement away from absolutism. Because of the availability of alternate schemata, 'right' and 'wrong' are not fixed as they were in structures with low integration index.

"2. The emergence of primitive internal causation. A fixed system, based on a rigid set of absolutes, requires and expresses no internal processes. There is no freedom of choice. When alternates are available, the individual must make choices; internal processes, however minimal, begin to emerge. At the second level, the internal processes are mainly conditional, and in this sense they are primitive compared to the internal processes of more abstract structures.

"3. Instability and noncommitment. In the absence of both absolute ways of evaluating environments and complex rules for integrating alternate schemata, there is ambivalence and lack of consistency in decision making and judgment. From the observer's point of view, conditional rules may appear inconsistent, and their application may indicate lack of commitment. In psychoanalytic terms, the person might be described as having a weak superego.

"4. A form of rigidity still present, as in the first level. Rigidity there was used in the sense that external stimuli are perceived in a minimally differentiated and complex way; thus, the richness and range of experience is small. At this second structural level, the rigidity is due to the fact that, after the selection of a given schemata when one perceptual organization has been accepted alternate schemata are almost completely ineffective. Information that could have entered the system via the rejected schemata is not available. There is, consequently, a failure to consider certain environmental pressures under some conditions.

"5. A 'pushing against' or negativistic orientation. When alternate schemata can be selected by a set of conditional rules, the person is able to generate and understand two or more ways of perceiving a given situation. But since the two evaluations are used in a compartmentalized manner, failure to utilize one schema can be interpreted by an outside viewer as "negativism." Further, the process of generating alternate schemata itself implies a 'pushing against' present or alternate schemata and can be again viewed as an expression of negativism."

Schroder describes moderately high development as follows.

"A number of important behavioral implications are associated with moderately abstract properties:

"1. The system is less deterministic. Combining and using two alternate systems of interpretation greatly increase the number of alternative resolutions that can be generated. Even when the individual closes on a particular decision, he is still open to a number of alternative pressures. At this level, abstractness (that is, lack of fixity) becomes a formal rule of the system.

"2. When system properties begin to permit the simultaneous utilization of two schemata, the environment can be tracked in many more ways. While moderately low integration index structure permits different ways of tracking or interpreting an environment at different times, moderately high integration index structure can vary combinations of alternate schemata. A person who is functioning at this level may view a social situation in terms of two points of view, see one in relationship to the other, perceive the effects of one upon the other. He is able to generate strategic adjustment processes, in which the effects of behavior from one standpoint are seen as influencing the situation viewed from another vantage point. This implies, for example, that a person can observe the effects of his own behavior from several points of view; he can simultaneously weigh the effects of taking different views. The adaptive utilization of alternate schemata here is much less compartmentalized than at moderately low levels.

"3. The presence of choice makes possible the use of internal processes. Such processes emerge in a rudimentary way in moderately low-level structure. However, the 'comparing' or 'relating' function, which is entirely an internal process, is characteristic of more integratively complex levels than the second. At the third level, structure is potentially self-reflective. The awareness of 'self' (and the 'self' as a causative agent) is greatly enhanced, although it does not reach its climax until the development of high-level structure. In moderately high levels of integrative complexity, rules are minimally fixed. They are no longer completely anchored in the past. When relationships are not thus anchored, the process of relating alternate schemata to each other is a highly internal one. It is internal in the sense that it is not anchored in established rules, in the sense that it represents a projection into the future, and in the sense that many different interactions can be generated in the same external situation. Functioning is decreasingly dependent upon immediate external stimulus conditions, and behavior is decreasingly predictable from a knowledge of the individual's past. In order to predict behavior, it becomes increasingly important to understand the internal processes of the structure. (Ibid. 21,22)

And, to complete the picture, let us look at the characteristics associated with high complexity.

"While moderately high structure generates rules for comparing and combining the effects of specific pairs (or small groups) of schemata at a time, high-level structure includes additional and more complex potentialities for organizing additional schemata in alternate ways. At the fourth level, comparison rules can be further integrated. Alternate complex combinations provide the potential for relating and comparing different systems of interacting variables. As with other system differences, the difference between the moderately high and the high levels is one of degree. In the letter, the potential to organize different structures of interacting schemata opens up the possibility of highly abstract functions (see Figure Two).

"In a very loose sense, and by analogy, the difference between moderately high and high levels may be described as the difference between an empirical and a theoretical outlook. At the moderately high level, a number of classes of empirical relationships are possible; in high-level functioning, it is possible to generate or apply general laws that systematize a large and differentiated body of information generated by simpler schemata in various related ways. Unlike the low level, which consists of a hierarchical set of established rules and procedures, high level functioning (which again reaches a form of unity in the system)

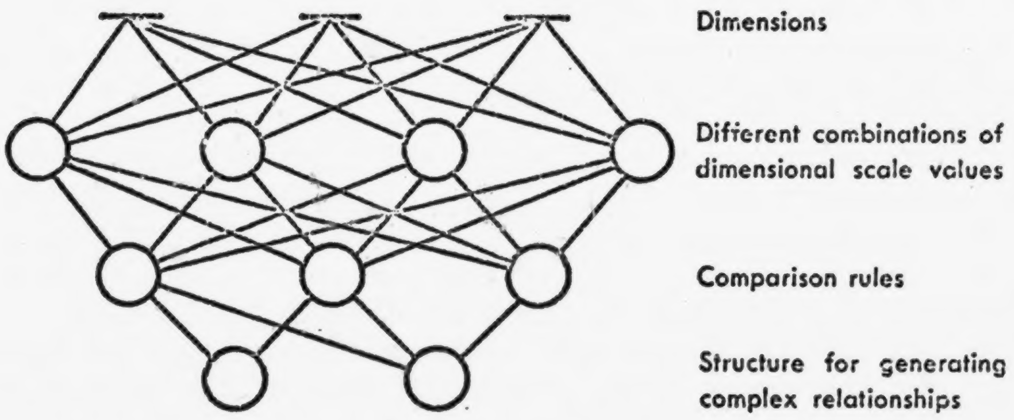

Dimensions
Different combinations of dimensional scale values
Comparison rules
Structure for generating complex relationships

Figure Two
High Integration Index

is characterized by the ability to generate the rules of the theory, the complex relations and alternate schemata, as well as the relationships between the various structures. It has the potential to generate alternate patterns of complex interactions.

"As with other levels, an increase in the number and complexity of the parts of the mediating structure is accompanied by (a) an increase in the degree of diversity the system can generate and handle, in the number of schemata and dimensions, and in the complexity of their organization; (b) greater discrimination between stimuli within dimensions) and (c) an increased potential for the structure to generate alternate patterns of interaction and new schemata without the imposition of new external conditions. Internal processes can produce alternate organizations of rules for viewing the world. These schemata can then be tested by exploration.

"This very abstract orientation should be highly effective in adapting to a complex, changing situation. It is certainly much more effective than a structure that is dependent upon external conditions for building rules and upon past experiences for predicting events. The effectiveness of high-level properties would be maximized if the criteria of performance were based upon (a) the utilization of many alternate interactive processes, and (b) the ability to cope with situational change over time. Highly abstract structure permits the delineation of many systematically related alternatives. If these can be kept in focus, decisions at a particular point in time should be most effective for adapting to a future event. At this level, the ability to discover and utilize information about a range of stimuli at any given time is maximized. High-level structure requires a rich set of empirical relations (evolved at lower levels), which can then be ordered in various ways through the emergence of superordinate rules. One of the problems in measurement is the empirical demonstration of such high-order schemata. At this level, schemata are not only compared; rules also exist for placing many a schemata onto a variety of linear dimensions." (Ibid. 22,23)

The assumption is that individuals who are in stage I are too inflexible to engage in much innovative activity without severe discomfort. Through the succeeding stages there is a general increase in flexibility. Specifically, an increase in flexibility can be identified in terms of the following four behaviors:

A) A recognition of the negotiability of conventions and rules. This can be seen when the teacher analyzing a school is able to determine ways in which procedures and rules can be renegotiated.

B) A willingness to negotiate the procedures in an educational setting. This can be seen when the candidate working with his peers is able to work out plans for his own activities which acccomodate to the wishes of different individuals.

C) The ability to generate concepts that accomodate new experience. This can be seen in the instructional decision-making tasks when the teacher, given successive increments of information about a learner, modifies his strategy and also in the flexibility tasks, when the teacher tabulates his strategy as he figures out the frame of reference of the learner.

D) An encouragement of others' struggle to create. This can be seen as the teacher, working with his peers as they attempt to build new educational strategies and carry them out, is willing to work with them in a coach-relationship, supporting their efforts and tolerating their failures. He manifests this by praising and encouraging them; by being willing to work with them to analyze their teaching and to improve it.

The Rationale of the Component

It is probably evident by now that there are three strands of activity in the innovating component. One strand relates to the development of activities to increase general cognitive flexibility. The second deals with activities calculated to increase personal creativity. The third are sets of activities designed to increase the student's ability to conceptualize and resist the forces of bureaucratization and to work with others to create institutional structures that facilitate innovation. The rationale for the third of these is taken from the work of Harvey, Hunt and Schroeder. The rationale for the second is taken from the work of George I. Brown. The rationale of the 1st is derived from the position paper prepared by Carl Weinberg. Position papers by Hunt, Brown, and Weinberg are included in the appendix to this component and the reader will surely wish to consult the papers, for the rationales are complex and the procedures are, to our knowledge, the first systematic attempt to build this kind of component in a teacher education program.

The first rationale - for helping the teacher innovator learn to analyze the bureaucratic system of the school and to cope with its alienating forces in such a way that he can create structures which facilitate innovation, we have drawn heavily on the work of Carl Weinberg at the University of California, Los Angeles. Weinberg suggests that it is indispensable that the teacher understand the bureaucratization of schools. Therefore, the teacher should experience the effects of bureaucratization early in his training experience, so that he can then analyze what he is experiencing and develop ways of coping with the alienating effects of working with a bureaucratic structure. But being able to intellectualize the conflict between the attempt to teach and the necessity for learning bureaucratic roles in most schools will not by itself protect the candidate from alienation. The critical element in Weinberg's strategy is to attach the student to a reference group which shares and together analyzes the problem of alienation and which works together in innovative activity, trying and trying again to develop and carry out new educational procedures. The group gradually acquires high salience for each of its members until it is able to function as a reference group-a group which anchors for each member the norm of innovation.

The essence of Hunt's position is that growth and flexibility is induced by matching characteristics of the training environment to the learner's state of development in such a way that the environment is characterized by a level of complexity that is just slightly greater than that of the state of the learner at the time. If the mismatch is too great the learner will tend to behave in less flexible ways and closedness to development may be a result. In other words, what will induce greater flexibility in one person will induce lesser flexibility in another. The procedures that Hunt uses are really in terms of characteristics of the social system within which education takes place. It is in the way one teaches rather than what one teaches, that one has an effect on flexibility. Hence, if an individual is in stage one (and our research indicates that perhaps three quarters of all persons who enter teacher education are in that stage)the major task is to induce the individual to be open to change. Since he sees rules as fixed, one wants to help him see how rules are derived from negotiation among people. But it would not be expected that the individual could take too much of this kind of activity. Delineation of personality so that a teacher can see the worth of his own opinions and begin to build conceptual bridges to the opinions of others is desirable, but to plunge him into a completely interdependent situation, would be to force him toward more closed behavior and probably sabotage the effort. On the following chart the characteristics of cognitive development are matched with the specifications for the optimal training environment. It should be recognized that this is a very abbreviated description and the position paper should be consulted for a full specification.

Because the Institution-Building component and the Interactive-Teaching component both provide many opportunities for activities which require flexibility and independent problem solving, it is not necessary to devote special flexibility activities for this component. The component, however, functions to apply principles on which the faculty counselors can vary the training environment in order to induce growth of flexibility in particular individuals.

Hence, for example in the flexibility training component it is possible for the faculty counselors to vary the complexity of the tasks. For stage I students, he should encourage them to engage in tasks which cause conflict between fairly concrete and easy to observe learner characteristics, when the faculty member can focus on the simple problems of delineation. He can help the less flexible people venture out and to begin to generate their own structures for looking at sensitivity and he can provide a good deal of structure in their activities, so that he keeps things going.

It can be seen that the procedures developed by Hunt and Weinberg give central importance to the inquiry group around which this entire program is organized. Indeed, the rationale for the inquiry group as the student unit in the program is partly its convenience for participatory democracy and the self-administration of the program. Also, however, the inquiry group fits with the conceptions that persistent creativity and innovation depends on the development of a reference group which shares the committment and which can stand as an anchor for the norm of innovation. As a consequence, the procedures of this component are heavily dependent on the establishment of inquiry groups and the interdependent democratic method with which they operate throughout the entire program.

Means of the Component

The means of the component will be described in terms of the two sets of procedures that have been developed respectively by Weinberg and Hunt.

The Means:The Institutional Area

As indicated above the means of this section of the component are derived from the work of Weinberg and his position paper should be consulted for a more extensive exposition of his position. The work proceeds in several phases, but they are not discrete and what is begun at one stage very likely will continue to the end of the program.

Phase I: The ability to analyze the institutional structure of the school and the problems of alienation which are involved in learning bureaucratic roles.

The activity begins with the reading and digestion of The Human Group by George Homans, A Social System by Talcott Parsons, and Willard Waller's The Sociology of the School. Each of these in its own way describes the institutional structure and how it can operate to stabilize itself through the bureaucratization of roles. This material should be read and discussed until the students have a fairly sound understanding of the basic concepts that these men use to analyze institutions.

This is followed by several weeks of work in a school setting in which the teachers, working in feedback teams, are apprenticed to experienced teachers in normal public school settings. (The "Experiencing the School" phase of the contact laboratory.) After they have had sufficient experience discussions begin and the students together use the concepts of the sociologists to study the institutional structure of the school, the types of bureaucratization of roles and to carry on research to find evidences of institutionalized and non-institutionalized behavior. Waller has described very nicely a distinction between behaviors which are simply engaged in in order to maintain the institution and those which are engaged in for educational purposes or such, and his typology can be very useful at this point. The teacher candidates will find that some school duties can be described as bureaucratic functioning and some are surely educational. This dichotomy will disturb many of them and they should be led to analyze the alienation that arises from the conflict between the two kinds of activities.

As they engage in the common experience of analyzing the institution, working as apprentices to it, and looking at their own feelings, each inquiry group will form its own particular core of experiences, concepts and sentiments which will be used throughout the remainder of the program. As they study interactive teaching, institution building, as they look at the social system of the school and the classroom and as they begin their work in the School as a Center of Inquiry they will continue to use this core of experience and conceptualization and it will be somewhat unique to each group. It is by no means necessary that exactly the same intellectual output emerge in the case of each inquiry group. In fact, because much of the activity will be the analysis of personal experience, the students will form their own particular cognitive structure that will enable them not only to cope with the facts of the situation which are external to them but their internal feelings as well. Nobody can predict in advance exactly what each group will need to do in order to make that possible.

From that point every effort should be made to help the inquiry group become welded so that it can work as a reference group.

Each reference group as they engage in the unit experiments and work in the School as the Center of Inquiry will be planning and carrying out teaching strategies. In this context will continue the activities of this component. Specifically, the groups will be helped to look at the unit experimentations as involving a re-socialization experience with the children. That is, each teaching experience requires that the children learn new ways of responding to the teaching strategies that have been developed.

The next phase of the activity occurs when the inquiry group is participating in the operation of the enrichment, remedial and summer schools and consists of the setting up of a school unit in which the roles of teachers and students are not bureaucratic but are devoted entirely to the facilitation of personal learning. As they develop the unit, the faculty counselor will need to help them look at it in terms of the above distinction. They will find that some of the roles that they will develop will be indeed bureaucratic (despite their best efforts) and they will have to endeavor to change these. If the educational activities that they try to carry out with the children are at all unusual, they will find some resistance from the children in learning the new roles - for example, children who are engaging in activities which are not the "usual" school ones frequently complain that they are not really going to school - and they will need to try and teach the students the new roles in such a way that they will become comfortable with them.

This process of combining experimental teaching with a continuing analysis of bureaucratic vs. authentic behavior needs to continue through the internship period and into the continuing education of the teacher.

Means: The Flexibility Area

As indicated in the rationale the procedures for developing flexibility are really guidelines for the handling of the activities of the Institution-Building and the Interactive Teaching components, rather than a set of separate activities. The reason for this is twofold. In the first place as has been explained in the rationale, flexibility training is a product of how people are taught. What we are trying to change is the structure of the student's linkage to environment rather than the content of his linkages. Hence, as he administers the components to himself it is desired that he see the rules and procedural regulations as negotiable and as things for which he himself is responsible. His flexibility in problem solving situations should increase slowly and he should develop the more complex internal structures that are necessary in order to deal with an emergent world in an interdependent way. The second reason that a separate set of activities is not provided is that the strategies of the Institution Building component and the Interactive Teaching component in themselves generate activities that are entirely compatible with the intention to increase flexibility. Nearly every sub-component has been designed so that the teacher candidate is not simple fed content but works in co-operative situations where he studies not just ideas but the nature of ideas as well. He is given many opportunities to create original solutions to problems and to increase his repertoire both of intellectual strategies for analyzing and solving problems and for technical skills for carrying out the solutions that he generates. The flexibility training sub-component, for example, is specifically designed to increase flexibility in technical teaching skills. Similarity the Models of Teaching sub-component is designed to expand the possible ways a person can teach.

Using Hunt's procedures, however, we can increase the potency of the activities of the Institution-Building and the Interactive Teaching components so that they will have a greater likelihood of achieving flexibility.

The means for accomplishing this relies on the faculty counselor. He shapes his behavior in the components in such a way that he matches the training environment to the characteristics of the learner according to the formula which was described in the rationale above. For stage one students he attempts to provide an environment which has reasonable structure in it. However, he provides small opportunities for them to negotiate procedural rules and activities which give them an opportunity to delineate their own structures. For example, with students of low complexity the faculty counselor, during a flexibility training exercise, would concentrate on helping the candidates see the difference between their own conception of the subject matter and the learner's conception of the subject matter and help the teacher candidate to form a concept which would build a bridge between himself and the learner. In the strategies of teaching sub-component he would emphasize the different views, and theoretical positions that have given rise to the nine basic models and he would help the teacher to identify his own position on learning and compare and contrast it with that of the theoretical models. The faculty counselor would continually search for ways that the teacher could learn to identify and to find his own position in reference to the others.

With students of more complex structure, the faculty counselor would provide less structure in the situation, putting the students in a position where they need to negotiate many of the procedures and procedural guidelines in the learning activities and helping them to shape and reshape the components. It would be expected that the less abstract students would tend to follow the activities in the components as they are laid out in this document. Students of greater complexity could be expected to want to use the structures which are given here only as starting points and to negotiate their own organization.

Students of fairly high complexity who have successfully negotiated the period of self-delineation will tend to be very much concerned with interpersonal relations and with the processes of tolerating divergent points of view. It is possible, in fact, that they may do this at the expense of getting on with the learning tasks. The faculty member wants to help the moderately complex student learn to reconcile interpersonal needs with task needs in such a way that both are accomodated in the learning situations.

It should be evident by now that this component is carried out through the differential training model which is used throughout the entire teacher education program to provide optimal educational environments for students with differing cognitive orientations. It cannot be stressed too much that to treat all students the same, rather than to accomodate to their cognitive orientation, can have a damaging effect. Students of low complexity who are placed in highly unstructured situations suffer great tension and stress and will actually become more rigid in behavior. On the other hand, students of very high complexity who are put in situations of high structure may be able to tolerate the situation but they are likely to form an extremely negative attitude toward the whole operation and grow cynical about their own teacher education program.

Appendix: Chapter Twelve

Problems in the Presentation of the "Real" Self

by Carl Weinberg
University of California, Los Angeles

Persons relate to others in social situations, calling forth postures which they associate with the same or similar social situations. These postures, or presentation of selves, reveal to others a person's definition of his role in a particular situation. Since all interactions are social we could assume that role theory, which attempts to explain character formation, could logically account for the self that others perceive at all times. Trait theory, on the other hand, developing from standard psychological paradigms, argues that persons contain relatively invariant personality characteristics which are only slightly modified by varying social conditions. Thus, each person contains two selves. One self can be linked to the regularities of social interaction, and is founded upon standard definitions persons within a particular society make about the normal expectations of others in social situations. The other self (which may or may not be referred to as the "real" self, depending upon our definition of "real") contains the element of uniqueness. This factor of uniqueness explains variations in the behavior of individuals in social situations.

This paper addresses itself to the problem of developing the capacity to transcend the confinements of traditional social expectations and definitions in such a manner that self estrangement can be avoided and committments to innovations in the social world can be made.

The notion of self estrangement, as it has been utilized in sociological literature, refers to a circumstance in which people devalue their self in terms of ideal standards.[1] This phenomenon arises from a negative comparison of the part of the self image related to actual behavior to the ideal standards incorporated through socialization, or represented in the behavior of others. Members of professional occupational groups, such as teachers, have undergone a long period of socialization to a professional role. Out of the socialization may develop certain idealized behavioral standards. Teachers evolve a definition of a "real professional self" against which they compare their actual performance. The demands of the professional world, with its bureaucratic bogs, administrative restraints, and requirements for success in a status system, often forces persons to abandon their "real" goals, to cease performing in terms of their "real" motivations, and to accede to the limitations of the ongoing system in which they occupy a role.

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[1] Seeman, M. "On the Meaning of Alienation," December, 1959, pp. 783-91

Notions of self-other relationships, integration and alienation, and freedom and self actualization should be linked to problems of professional socialization. We need to ask: How do persons in standard social situations develop the capacity, as well as the commitment, to deviate from the institutionalized restraints inherent in social systems to bring about changes in those systems.

The Structure of Institutions and Groups

Families, churches, schools, peer groups, etc. contain a system of beliefs and values about what constitutes desirable behavior. These values, as a collective tradition, mold the direction of the group and set the criteria for the evaluation of the performance of the members. In order to attain the cultural goals of the unit, persons are arranged in coordinated role relationships such that effective communication and control over the behavior of members is possible. These role relationships become patterned through a system of rewards and punishments such that persons perceive themselves in a mirror for performance. When these expectations become internalized, the system is assured its equilibrium.

If role occupants consider the expectations associated with their roles legitimate, the institution may achieve long-standing stability. Legitimacy of expectation is determined by the relative effectiveness, in terms of control and communication, that networks of role relationships have. Interpersonal relations, taking this structural view, are analytically interpreted as functional relationships associated with one of the major functions of social systems.[2]

From the vantage point of social systems, the notion of a real self, or even of a person who can become self-estranged or alienated, becomes irrelevant. Innovations or changes within the system can only be viewed as structural accomodations to new system functions. Where new demands are placed upon the system or group from the general culture or even from within, a rearrangement of these structural components occurs, and new roles become integrated into the ongoing network.

The Character of Social Types

Given a set of structural conditions we can then begin to describe the variations in adaptation made by different social types within this structure. R. K. Merton's typology of different modes[3] of adaptation provides a useful framework within which one can present this concept of variation. Merton postulates five social modes which he sees as possible responses to standard cultural goals and institutionalized means for attaining these goals. These he labels conformist, innovator, ritualist, retreatest and rebel, and postulates that these modes emerge out of the position of persons in the social structure and are independent of personality characteristics. While we might accept this position from the structural perspective, we should also consider the possibility that while position in the system explains regularities in social behavior, individual qualities can account for deviant cases. The simple fact that the presentation of the "real" self in social situations is such a common interpersonal problem, and consequently of interest to academics and to this project, indicates we are as concerned about individual irregularities in social life as we are about regularities.

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[2] Talcott Parsons (The Social System) postulates four dominant functions of social systems:1.Adaptive moving the group efficiently towards its goal, 2. Pattern Maintenance - committing the group to the cultural values of the system, 3. Goal Attainment - defining specific goals of the system and committing members to the attainment of these goals, also legitimating these, and 4. Integration - the function of developing solidarity of members so as to ensure the coordination of roles towards the end of accomplishing the purpose of the system.

[3] Merton, R. K. Social Theory and Social Structure, Free Press, Glencoe: p. 140.

To approach the problem of developing an educational experience in which persons develop insights into the structural and personal foundations of their relationships with others, we thus must consider the microstructures which produce regularities and the microstructures which explain variations. By microstructure, we mean only to suggest that social adaptations can emerge out of the idiosyncratic experiences; such experiences force persons to turn away from the paths predicted for them to directions consonant with an awareness of self. Such experiences as therapy, war, divorce, plastic surgery, and LSD have been known to produce important changes in the way persons adapt to standard social roles. An educational experience of the sort envisioned in this project may have the same consequences.

Interpersonal relations often receive their character as a function of the continued interaction of specific social types. Persons choose roles within social situations and continue to perform consistently as long as their choice continues to be rewarded. Very often roles chosen in childhood (e.g. the scholar, the leader, the athlete, the good friend) persist into maturity. In this sense the "real" self is submerged in the interest of assuming a comfortable and available role. In the school setting, the classroom clown may be the most intelligent student who has, because of circumstance and selection, chosen an alien role. The simple fact that he is good at it forces others to relate to him in such a way as to inspire him to greater acts of clowning. Thus the forces of social approval and disapproval, in informal as well as in formal interaction, conspire to shape a relatively permanent social personality. These forces, then, in the broadest social psychological sense, are the microstructures which influence adaptations to the social world. The professional or the occupational self simply adds functional components to the basic and the socially determined self. Interpersonal relations thus evolve into a process of presenting all of these components to others and responding to a like presentation.

Social Typing and the Definition of the Self

Social typing controls the predictability of behavior of persons in social roles. It orders relationships in organizations and provides the basis for maintaining stability of the stratification order. Typing persons, for example, as destined to achieve certain occupational goals, provides the kind of definition of self that enables persons to achieve these goals.

Socio-psychological typing is an obvious aid to the individual in ordering his social relationships. The complex worls, particularly the urban world, is most efficiently organized when persons can be categorized. Such typing insures that few interactions require a total interrelational exploration before communication begins. Typing also appears to be the most efficient way of managing social growth without anxiety.

Typing, particularly stereotyping, which also increases the efficiency of interpersonal relationships and reduces anxiety, may not be a desirable social mode but it is, nonetheless, the standard mode. Conditioning persons to avoid practices which have been useful for many years is a difficult task, but we will suggest that such conditioning can be useful in encouraging a different kind of interpersonal interaction.

As we have seen, most interpersonal relationships, particularly within bureaucratic structures, occur as a process of relating to types. Klapp's[4] classification of dominant types as heroes, villains and fools may not be a complete classification of dominant types as heroes, villains and fools may not be a complete classification system, but it is a useful illustration of the *kinds* of definitions persons use to organize their interpersonal interaction. These categories of types are defined in terms of some attitudinal position or idiology in most bureuacratic interactions. And in most cases the classification occurs as a result of a person's assessment of *that position* in relation to his own. A teacher, for example, may be defined by some females as a hero to whom they relate with affection. He becomes a hero because he personifies the qualities that many middle class girls aspire to attain and represent, such as wisdom, morality, and decorum. Many lower class males, however, may define a teacher as a fool because he has spent so much time getting an education and then makes so little money. Any attempts this teacher may make to present himself in some basic and honest way will be defined by these boys as a simple extension of the fool model. Consequently the influence of the teacher is not only negated, but may have a negative effect.

We can assume, then, that the dynamics of social typing complicate any attempt to help persons relate to others on some basic or even correct grounds. Even if we could socialize persons to forget about the kind of "front stage" and "back stage" behavior Goffman talks about[5] (that is, role playing shifts in terms of varying situations), we still would need to solve the problem of how to avoid the disfunctional consequences occurring as a result of the social typing or stereotyping employed by others.

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[4] Klapp, Orin, *Heroes, Villains and Fools*

[5] Goffman, Irving *The Presentation of Self in Everyday Life*.

Personality, The Self and The Other

Personality is a convenient psychological construct which defines persons as members of various categories, or as holding a position on a scale of psychological traits. The traits which define personality can be categorized as needs, such as succurance or affiliation; as dispositions, such as aggressiveness or introspectiveness; or as orientations, either mechanical or social. As interesting as such trait typing may be, the construct is not especially useful in the consideration of our problem, for our goal is to make possible certain changes in adaptations to others. Our concern must be with the "self", the phenomenological self, and we must primarily consider the ways in which a person perceives himself in relation to his social world. The phenomenological self is defined not according to a scale of traits, but according to the way in which persons want to be seen by others, and according to the relative importance the actor places upon the evaluation of specific characteristics which he possesses. As Sherif[6] suggests, the human person actively sets levels of attainment and goals of achievement in matters of significance to him. These are components of his self image and as such motivate him to maintain consistence in pursuing objectives. But the self system is not a unitary structure, as Sherif has noted; it contains components (attitudes, identifications, commitments) which contradict one another. These, then, become the source of internal conflicts.[7]

Components of the self system are usually objectified by the person into his social situation, for they help maintain the consistency of the self. Social-psychological literature sees these objectified components as reference groups. These are groups with whom persons affiliate, to whom they confer loyalty, and in terms of which they define themselves. Often these may be groups with which persons only aspire to affiliate, but the mechanics of identification remain the same. The significant others for the actor who wishes to stabilize his self system are representative members of these reference groups. From these persons the actor gets cues for his self presentation. Often, however, even these constructs are anxiety-producing, for actors may find themselves ensconced in roles with contradictory expectations. Even though persons in each group may be defined, at least situationally at one point in time, as part of a significant reference group, any contradictions, defined as real by the actor, become real in their consequences. That is, they cause him to reduce the dissonance he perceives in the impinging expectations at the same time maintaining loyalty to both groups. Such role conflict will be seen to be relevant to building a system in which we can advance a case for the development of an institutionalized pattern for relating to others in terms of a "real self".

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[6] Sherif, M. Social Interaction, p. 16.

[7] Sherif, M. Ibid., p. 17.

Role Playing and Role Taking

Ralph Turner's[8] significant paper on the subject of role taking and reference group behavior spells out more precisely the meaning and variations of the concept of role, and is useful to our analysis. The first of his useful notions is that role is more than a reaction to the behavior of a person in another role. We must extend our concept of role to include, more precisely, the definition that the actor makes about the behavior in the contest of the set of expectations imputed to the others' role. The utility of this distinction for purposes lies in the way we train persons to adapt to new roles. The development of an attitude and a posture for innovating on traditional definitions of role performance is linked to the configuration of cues that persons use to inform them about how to respond. Simply by acknowledging the cues persons use to organize their role presentations, we can begin to assess their legitimacy and possibly empirically validate or reject our perceptions. Seeman's[9] study of the role perceptions of principals, by principals and teachers, indicated that they had different perceptions of what constituted the role. We might conclude from such evidence that teachers were responding incongruently to the principal's definition of his role.

Another useful distinction posited by Turner[10] is that between "role taking" and "role playing". The former is viewed as the imaginative reconstruction of the role of the other and the latter is construed as the overt enactment of what one conceives to be his appropriate role in a given situation. Role taking, then, can be viewed as a commitment or internalization of the expectations such that the cues for behavior come from the self. Role playing involves assessing what is appropriate from the situation and acting accordingly, regardless of one's own predisposition in a given situation.

Mobility, or even survival, in an occupational system such as teaching, is related to the degree to which one has internalized the norms for interaction, and the extent to which teachers can perceive the appropriateness of behavior in different contexts. Sociologically, the process of role taking or playing is not effected by the accuracy of the perception of expectation . The way it occurs is always the same. However, for our purposes, the content which cues teachers to perform roles in specific ways is important.

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[8] Turner, Ralph. "Role Taking, Role Standpoint, and Reference Group Behavior," AJS, January, 1956.

[9] Seeman, M. "Role Conflict and Ambivalence in Leadership," ASR, Vol. 18, 1953, pp. 373-80.

[10] Turner, Ibid.

Role taking, in its relationship to the content of the role, such as techniques and attitudes towards teachers and students, is important to the prime reference group which has socialized teachers to occupy a professional role, but this seems to defer to role playing once the roles are actually assumed. At this point the professional group of colleagues may emerge as another significant reference group, which then produces the kind of role conflict about which we spoke earlier. Or persons abandon their "real self" and begin to role play, looking only for cues of appropriateness rather than basing their interaction on what they believe to be important in interpersonal, or interprofessional relationships. Probably both kinds of adaptations occur. Correspondingly, the important task for a training program is to strengthn the commitment of persons to the reference group which builds the "real professional self" and at the same time confront persons, in this case future teachers, with the consequences of role playing.

Appropriateness as a critical definition of the basis for interaction obviously maintains systems in equilibrium and precludes change, particularly when appropriateness simply means what has been expected in the past. If we can somehow shift the meaning of appropriateness of social action to substantively refer to innovation, which could very well be an integral part of the "real self" of the trained teacher, then presentation of that self in social and professional relationships could become institutionalized.

In a study of 535 school teachers, Weinberg, McHugh and Lamb[11] discovered that alienation amongst these teachers was very low. The researchers inferred that these teachers generally had abandoned their real self to achieve security in a system which was not, and is not, significant in their lives. Such teachers either identify with the new reference group whose commitment is primarily to stability, or they are simply role playing in the sense of doing what is expected. Their jobs are secured, and mobility, if they wish it, is not endangered. Another possible interpretation of the findings is that self-role conflicts are obviated by the disappearance of the self. Of the many kinds of role conflicts that Sarbin[12] describes, the one most relevant to our problem is that of the conflict between the self, defined as the internalized commitments to maintain consistency within the person, and the role, or the expectations of others in the ongoing social system. As long as the person's expectations for his own behavior are incongruent with the expectations of others within the system, and as long as these expectations of others prevail, which they invariably do in schools, there will be alienative effects. The fact that the teacher alienation study was unable to discover many of these effects suggests that the self component was so rationalized, or that the dissonance was so reduced, that the incongruence did not confront these persons. Since Stauffer[13], and subsequently others, have demonstrated that role conflicts are reduced situationally, it is useful to look at the kinds of reduction mechanisms which apply to our specific situation. One way in which female teachers reduce dissonance is by deferring to their primary role, wife and mother; another is to convince themselves that individuals do not make much difference since students are exposed to so many other forces; a third is to believe that the stability of the school is the major goal. The latter becomes easy to accept, since disruptions in the school milieu are consistly defined as undesirable.

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[11] Contexts of Teacher Alienation, USOE Report number 5-10-170.

[12] Sarbin, Handbook of Social Psychology.

It is the opinion of the authors of the Teacher Alienation Study that the teachers had been co-opted by the system, were integrated in roles which required an abandonment of awareness of one's own needs related to his position in the structure, and they had submerged the self to system interests which they were made to feel were personally important.

The Bureaucratic Self

Max Weber[14] delineated five characteristics of bureaucratic structures which are relevant to any study of professional alienation. As we consider the cumulative characteristics of bureaucratic systems, we find a portrait of a system that would appear to discourage any attempts to help persons relate to others in ways not completely prescribed by those systems.

The characteristics, as outlined by Weber, are as follows:

1) Bureaucracy has fixed jurisdictional areas governed by administrative regulations. Each job has a description which contains the duties of that position.

2) A bureaucracy contains a hierarchy of authority. Most authority is invested at the top, and persons in those positions have the responsibility, as one component of their authority, to control the behavior of those below them.

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[13] Stauffer, Samuel, "An Analysis of Conflicting Social Norms," American Sociological Review, 1946, 14, pp. 707-717.

[14] From Weber, Max, Essays in Sociology, Oxford University Press, New York, 1958, H. H. Gerth and C. W. Mills, Eds.

3) Management of the bureaucracy is based upon written documents, minutes of meetings where decisions are reached, extensive filing systems and personnel records.

4) Recruitment to bureaucratic roles occurs in terms of specific criteria and training. These criteria help to control the stability of role enactment, stable in the sense of being congruent with the expectations for behavior held by others in the system.

5) Bureaucratic roles are prescribed by an exhaustive set of regulations, manifest rules, which control the behavior of members.

Teacher educators, in preparing persons to assume bureaucratic roles in ways that may not be prescribed by the inherent conditions of bureaucratic life, must discover and present ways in which job descriptions, recruitment criteria, manifest regulations, etc., can either be changed or circumnavigated. In other words, students may need to be trained for revolution.

It would seem that certain kinds of revolution within education would be an almost necessary condition for the presentation of a real self. Even though the mechanical structures of bureaucracy may remain the same, the bureaucratic self could conceivably undergo a substantive revision. And then, although the institutionalized characteristics of bureaucracy would remain the same, the substance that has been institutionalized would be quite different. We could, for example, require that all teachers undergo a period of basic encounters, that authority be decentralized (moved to the classroom), or that job descriptions be made more flexible. We could envision a set of prescribed negative sanctions for teachers who have quiet classrooms. An experience which would communicate the kinds of dependencies that are used to regulate behavior, what we might call conditioned needs such as earning a steady living and gaining status within a bureaucratic system, could be explored as control mechanisms, rather than need systems. Alienation is a common characteristic of contemporary bureaucratic life, and it would seem most obvious then, that the way to reduce alienation would be to change the character of bureaucracy.

Integration

The opposite of alienation is integration in the sense of a congruency between the self and the role. While role expectations may conflict with the self, the person may still be integrated into the system if the structure provides the means for effecting changes, thus bringing the role more in harmony with the self. The person thus integrated has **power**. An integrated self is, further, a self which perceives a meaningful relationship between the goals of the institution and the self; it is also a self which ascribes legitimacy to the ways and means of accomplishing these goals. It is a self which perceives a congruence with other persons in the institution in terms of agreement about means and ends. And finally, an integrated self is one which can use the institution as a vehicle of self fulfillment.

An integrated self interacts in a desirable manner with others in his social relationships, that is, the role components which are alien to that self do not intervene in such relationships. To see such an integrated person as a reality should be one of the goals of our teacher training program. At this point in our study we must find components of action which might achieve that end, and we must rationalize such components of integrated action in the light of our discussion of alienation and bureaucracy.

To begin, teachers need to see and understand the school as a social system. They must attack the problem of authority structures, and learn about expectations and value systems. More important, and as a basic gesture toward achieving an integrated self, they must attack the question of the legitimacy of these authority structures. They must solve the problem of how various role participants decide the parameters of authority and the basis on which legitimacy is assumed. Students, for example, either reject or accept the authority of teachers to the extent that teachers meet certain criteria and perform in certain ways. Certain criteria are used by students, e.g. fairness, consistency, and the relationship of the teacher to student leaders or to administrators.

To answer the problem of authority in the schools, future teachers should learn to conceptionalize the interaction components which characterize bureaucratic positions, and in terms of these interactional routines, assign legitimacy to authority. It is not enough, for example, for a student teacher to return from an experience in a classroom and report that her best intentions to be her real self have been frustrated. She must begin to conceptualize the basis of frustration. Such discovery and analysis takes us beyond the sheer awareness of being alienated to a conceptualization of the structure of alienation, a subtle and refined distinction, which is based not so much in the formal rules of the organization as it is in the informal definitions of expectations and of the routines which legitimize constraints. Very simply, the teacher-educator's first task should be to familiarize future teachers with actual behaviors, in the form of patterns, which restrain the development of an integrated self. It is not, for example, that administrators refuse to permit participation by teachers in deciding objectives and strategies. It is a whole system of patterned interactions which makes such participation difficult.

Once the student teachers have begun to clearly see the social system in which they must function as integrated selves, the next important experience should be one in which they are forced to experience characteristic restraints, frustrations and inhibitions. We might think of this as enforced organizational impotence, or as education for alienation. This can be effected in two ways: by placing these persons in a real school setting where institutionalized restraints are highly visible, by simulating for the students the processes of alienation. The simulation process should make students feel powerless; that the meaning of what they are doing is unclear, that they must deviate from the norms to survive, that they are isolated in terms of what they think should happen, and that their best capacities are being misused or not used at all. After the students have experienced the process, extensive and intense discussions should be organized, so that the students may analyze the way they feel and determine what actual behaviors, on the part of others as well as themselves, made it occur. Finally, the discussion should center around strategies for changing the alienating structures in schools. If, for example, the isolation component can be seen as relevant to certain patterns of disaffiliation on the part of the staff(either teachers or pre-teachers), then strategies for organizing persons with common concerns and similar feelings of isolation can be formulated.

An excellent follow-up experience might be a simulation of an integrated system where all the components of integration could be guaranteed. It would be a simple matter to insure influence, clarity or meaningfulness, togetherness, success through institutionalized means, and the utilization of the best (the way he wants to be seen and evaluated) in persons in an experimental situation. Although highly problematic in the real situation, at least the student teachers will become able to recognize what is missing and focus upon the behavioral patterns which inhibit the establishment of an integrative system.

Another focus for solving the problem of the presentation of the integrated self would be to attack the problem of the role rather than, or perhaps concommitently with, the problem of self. At this point, let us consider the problems associated with an analysis of role. Most institutions expect that socializing agencies, particularly those related to preparing persons to follow professional vocations, are required in order to make individuals into types compatible with the roles they are about to assume. In contrast, we should not only concern ourselves with problems of enabling persons to relate interpersonally in a way that is both difficult and unclear in the institution, but also we should focus upon ways of shifting structural components to insure a reduction of self-role conflict extrinsic to the self. As Cicourel and Kitsuse[15] note in their discussion of the selection of school counselors, the kinds of people who were chosen to make important educational decisions for hundreds of students were those who were compatible with the way in which the particular institution defined the counselors' role. In the upper middle class community studied by Cicourel and Kitsuse, expectations for counselors centered around a definition of a role occupant as one who possessed a lot of psychological knowledge and a commitment to worry about maladjustive behavior in psychotherapeutic ways. In the same way, the traditional, normative expectation for teachers in Harlem would be for behavior that could absorb conflict, routinize frustration, and teach basic communication skills without resorting to conceptual thinking.

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[15] Cicourel, A. and Kitsuse, J., The Educational Decision Makers, Bobbs-Merril, 1963.

At every level, student-teachers and teachers must articulate and inspect educational roles. Students must somehow be socialized to believe that innovations are not only desirable but possible. Certainly, educational innovation is an illusive phenomena, yet some basic ideas about change can be communicated which indirectly sensitize persons to a belief in its feasibility. Thus the realization of an integrated self depends upon the reorganization of educational roles and a re-definition of the rights, obligations and expectations surrounding them. The Teacher Alienation Study has demonstrated that alienation is structural, and that alienation is implicit in the routines of educational systems, and operates independent of the configuration of personality types which enter the system. As such,these role structures need to be re-organized, and students who hope to survive as an integrated self within school systems should begin thinking about the problem from this structural perspective.

Cues for Behavior

Persons look for cues to help reduce discomfort and to aid them in responding appropriately to their social situations. In classroom social systems these cues emanate from three sources: 1)from the external environment which would represent the expectations of the community; from school administration and teachers as role types rather than persons; 2) from the internal environment, which is made up of daily interaction with role occupants such as administrators, teachers and pupils; and 3) from the professional reference group which reflects the widsom of professionalism, often traced to graduate and undergraduate studies and professional literature.[16]

Self-other relationships, taking the three cue systems into account, can then be described as another kind of reference group behavior such that conflicts are functions of one's position with

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[16] Weinberg, C., Social Foundations of Educational Guidance, Free Press, (Forthcoming)

with respect to each cue set. The person is a member of each system and receives cues from each. As cue systems, the three may be highly congruent. But such congruence is generally only an ideal. Normally, (1) the traditions require strict adherence to a set of rules which permit limited flexibility; (2) interactions present the actor with the definition of acceptable behavior at one point in the social history of the group and this is frequently a compromise between demands for control and expectations for creative leadership; and (3) the professional ethos expects a dynamic involvement in the institution and the application of up-to-date knowledge, plus a positive attitude towards experimentation and innovation. The teacher as actor is typically forced to accommodate all three systems. This, in actuality, cannot be accomplished by the real professional, since a commitment to one or the other set of cues usually produces strains around the other. Accommodation to all three cue systems can only be accomplished if there is no commitment, but only a desire to survive in the institution.

Thus the development of a professional self through the kind of model proposed by the project must anticipate that strains in reacting to the other two systems will be inherent in the experience of the teacher as a member of an ongoing cultural and social system. If we assume that building a professional self involves a commitment to a set of ideas about education on the one hand, and a similar commitment to maintaining an integrated self in interpersonal relations on the other, then we can begin to assume that we have made the future teacher ready to maintain consistency in her future role enactments. The remaining problem is how we can reduce the strains incumbent in the other cue systems. The answer would seem to lie in two directions, only one of which is relevant to our specific problem of teacher. The first direction is to work towards redefining the culture of the school from a restrictive, institutionalized formality with structured relationships (which may no longer be functional to contemporary educational goals) to a system which values change and experimentation. This would involve the kind of attack on role structures discussed earlier in this paper. The second direction, based also upon some of the propositions already mentioned, would involve the development, in the program, of a cohesive professional reference group.

Teachers, as a professional collectivity, only exist in the abstract, and as such do not control the behavior of members due to a lack of opportunity for frequent interaction. Teachers upon graduation from college are dispersed throughout the broader system and frequently become isolates in a new culture, simultaneously losing their identity. What is required is a way of developing this reference group such that mutual support for presentation of the integrated and professional self is possible. This can be initiated as part of the training experience, and hopefully maintained throughout the careers of persons. Such a reference group is conceivable as well as possible, and in the final pages of this paper we will present a description of the form of this reference group and a rationale for its incorporation.

The Integrated Self Game[17] (Also to be referred to as the Reference Group Game)

A group of pre-teachers sitting in a circle (minimum 10, maximum 12). Pre-teacher A (to B) - Well, B, what's going on with you

B - Somethings are moving, I think I'm catching on about getting kids to help plan the unit. It seems to be working.

A - O.K., that's fine, I take it everything else is perfect

C - Like what else is going on in your life at the school

D - Well, no real problems.

E(toA) - This joker is telling us that he can do everything he wants to do. Who does he think he's talking to, like we don't know the problems.

A - Isn't there anything else you want to tell us about

B - Well, there is one thing

C - Run it

B - Well, I'm just not sure it's worth the effort, I mean I don't think I'm going to be able to do all the things I'm learning to do, or want to do.

D -Like what, what the hell are you talking about.

B -I can already see myself falling into certain patterns that I don't like, like yelling at the kids when they get noisy, becoming impatient for them to learn things, you know, wanting to prove things to everybody, like my supervising teacher, and the principal.

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[17] This is a variation on a game used in the rehabilitation of drug addicts, the purpose of which is to give the members a "stay clean" reference group. See L. Yablonski, Synanon.

D - You poor thing, you don't like yourself, so why don't you do something about it.

E - You're and introspective type, aren't you, always thinking about what you'd like to do or be.

D - Always getting ready to get ready, you're a pussycat.

B - These things aren't easy, to change a schools way of looking at it.

A - That's tragic, it's not easy, a big cop out.

C - What are you doing about yourself, so you can live with it and not feel like an impotent child.

B - What do you expect me to do for Christ's sake.

C - You know as well as anybody, just do something, come back next week and tell us one step you've taken. O.K. A, you sound quilty about something, what's your hangup?

Student teachers should be exposed to an integrated self game (Reference Group Game) in which a group of pre-teachers undertake to castigate the professional performance of one their members. The game itself develops a core attitude through attacking persons in terms of a set of ideal standards to which all ideally subscribe. Unlike T groups, sensitivity training and therapy, a reference group game would have the effect of always posing the total group against each individual. In this way each person who is being attacked does not personalize individual hostilities but rather, since all members of the group attack the same behavior in the same way using the same standards, he will begin to perceive the generalized standards as they apply to each individual posture, attitude or behavior. All pre-teachers should be sent out into situations in small groups such that someone will be able to pick up data which can be used in the game. Something that might come out as an indictment such as:

> "I noticed you assigning those stupid grammar drills last week. Is that the best you can do after all you got here? You're a Neanderthal man."

or:

> "One of your students told me that you want them to memorize a bunch of names and dates. What the hell does that accomplish?"

It may well be that the indictments are exaggerations of real behavior, but in the process of reducing the exaggerated indictment to the level of reality, the person may still reveal a violation of the cues for behavior that he should have taken from the reference group.

The popularity today of basic encounter groups is obviously a function of the depersonalization of interpersonal relations. People run to a legion of such sessions to discover who they are and to be educated about how to be themselves. T groups and the like are beginning to be used in educational programs. The function of the reference group game is not so much intended to help persons find out who they are so they can present the real self, but to reinforce a standard of behavior desirable for innovative, creative functioning in a bureaucratic setting. Since it is the professional definition of self we wish to support, the consistency within the self we are seeking can only be maintained with the help of an ongoing reference group. As abstract set of standards which can be violated without fear of sanctions does not serve this function. Socialization to a profession is a process of building an internalized set of beliefs about what one is in relation to clients, consumers, patients, or students and teachers. It appears that it is necessary, given the lack of control that colleges of education have over their students after they assume professional roles, to personalize the standards through controlled, continuing interaction. This will guarantee a viable reference group from whom cues for action and interpersonal relations can be taken. The viability of such a reference group may depend on such an activity as the Game, which can be usefully prolonged beyond graduation if it can be made a desirable experience.

The success of organizations like AA and Synanon can be directly attributed to the same mechanism, providing members with a reference group to whom they must account (this becomes internalized) if they violate the standards. Of course teachers or future teachers do not need to be "rehabilitated" in the same sense, but we can take instruction from the structure of such groups, if such a reference group is desirable. In such groups persons will develop habits of expressing and supporting such standards as honesty and integrity in the presentation of self which should carry over into the organizations in which they work.

The Control of Social Typing

We took the position earlier that social typing sets in motion a mechanism, often referred to as the "self-fulfilling prophecy," which drives persons to achieve or abandon goals which they come to believe they should or should not attain. We have also argued that typing sets the tone of interpersonal relationships such that persons respond to others in ways related to these often rigid definitions. For the teacher, the typing students make can easily subvert his best intentions, simply because they ascribe to the teacher qualities which they reject in themselves. The presentation of the self, and the maintenance of consistency in that self, cannot be managed in environments where rigid typing controls the ways in which persons are perceived.

As most of us know, stereotypes diminish with frequency of interactions. *The American Soldier*[18] demonstrated that integration of army units reduced prejudice amongst the white soldiers involved. The solution for teachers attempting to avoid the invidious consequences of typing would appear to lie in the kind of interpersonal relationships they develop with students. However, this is only a partial answer. The other tack would require a neutralization of the structural possibilities for typing. The ecological arrangement of the classroom is important. Teachers' desks and the physical position of the students can communicate a specific kind of structure for interaction. The fact that the interaction of teachers and students involves an evaluative procedure is another component of that structure. Another most obvious factor is the flow and direction of communication, and the authority intrinsic in it; students use these structures to define the situation and the persons in them. Even though we are aware of these situations in which a fresh approach brings about re-evaluation of stereotypes, we cannot yet talk so much about a long-range overhaul of the traditional structures. We must face the immediate problem of a reduction of tendencies on the part of students to define the situation, prematurely and rigidly, and consequently type personnel in the old way.

Despite attempts to disrupt persons through the mechanics of controlled disorganization, they will always attempt to normalize the situation and account for unpredictable behavior in normal ways. Garfinkel has empirically demonstrated that persons react to unexpected behaviors on the part of persons they know or have typed[19] by attempting to bring the behavior into some kind of normal perspective, e.g.: "he is only acting that way because he is sick."

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[18] Stouffer, S., *The American Soldier*.

Suppose a teacher walked into the classroom for the first time and told the students, "You can call me Buck instead of Mr. Smith; you can say anything you want in this room; you can even curse if you feel the need to. Nothing will happen to you. You can leave your seat when you want, go to sleep if you want, and cry or scream if you are unhappy. You can shout with joy if you're happy." Students in a normal school situation know that this person is a teacher. What will be their response to this declaration? They will probably immediately assume either that he is crazy or that he is inexperienced and hasn't learned how to act as a teacher. Or they may simply not believe him.

The point of all this is that the standard definition of the role of teacher includes a large number of expectations, which, if violated, will be treated as deviant. Persons will either disregard deviation from the stereotype, or attempt to bring it into focus in terms of the earlier standards. Obviously, the teacher who wishes to re-define his role to avoid typing or stereotyping, has somehow got to manage others in such a way as to be accepted in his presentation of self.

There are at least three ways of effecting the types of change this paper has seen as desirable. Only one of these possibilities is feasible within the confines of the present project, yet each should be clarified. The first option is that we start from scratch, re-defining all traditional role characteristics which interfere with personalized interaction. This requires an experimental model, and the financial sponsorship to effect a new institutional context. The second constitutes taking the present context and systematically eroding away all the traditional definitions, rewarding behavior that was not earlier rewarded and punishing behavior previously proscribed. There can be several variations on this theme. One might be to choose selected behavior (such as volunteering, or unsolicited talking), and reverse the traditional sanctions associated with these. Another variation might be to randomize techniques of sanctioning and the behaviors to be sanctioned up to the point where students can no longer rely upon traditional expectations; after unsettling the expected patterns we then begin to seed in a new stability by consistently rewarding or punishing specific behaviors.

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[19] Garfinkel, Harold, "Studies of the Routine Grounds of Everyday Activities," Social Problems (Winter, 1964) II, 225-50.

The third alternative, which seems most appropriate for this project, is to prepare students to undergo a re-socialization experience. That is, teachers will need to be trained to manage a group of students in the re-organization of their routines and expectations. The student teachers must rediscover ways of knowing what the expectations of each context are. As teachers, they must leave off their own stereotypes of how middle or lower class, black or white students expect to be related to.

They may use these typings to structure their initial action in reverse fashion so as to observe the reaction of the student group. For example, a teacher may wish to talk about norms rather than "our neighbors" in a second grade class, and he may want to do it in such a way as to avoid providing the specific factual information he thinks the children expect. If they do expect this he will know it from the way they respond to his approach, from the positive demoralization that occurs when the children become confused.

At this point in the new method, the teacher should make possible a discussion of symptoms of confusion or disorganization. This discussion should be institutionalized within the routine of the discussion and students must be forced to explain the basis of their expectations so that they can be mutually examined. They must be forced to remark the teachers X or Y did things this way or that, that they always got detentions for calling out, that such and such has never been permitted and such and such always expects it. A discussion of this sort only has meaning as students strive to achieve some consistency in their own behavior, which they see as being retarded by the teacher.

Re-socialization is a difficult task in a bureaucratic setting, and the realities of the situation are such that only small approximation of what we need to do can be done.[20] But if we are to avoid the pitfalls of the certain kind of typing which retard the tendencies toward the presentation of the "real" self we must begin to make some notions in that direction.

Freedom and Autonomy

Freedom is the condition under which persons have the courage to choose their behavioral cues from amongst those they believe are the most directly congruent with the intention or desire of the self. At times they may feel that a cue emanating from the traditions of the institution are sound in terms of the belief system of the self. Here there is no conflict. When the cues for performance emanating from any source (any of the 3 systems) are in conflict with the self, the free man reserves the right to disregard such cues and appeal to one of the other sources which is more congruent with the self. But this kind of freedom, as Fromm's several works reiterate (See: Escape From Freedom) is difficult for most people. It requires the strength to stand alone to bear up under considerable isolation.

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[20] McHugh, Peter, "Social Disintegration as a Requisite of Resocialization," Social Forces Vol. 44 (March, 1966) p. 355.

Empirically, although Fromm simply makes historical inference, most people run from this kind of aloneness and isolation and are usually forced to select a physican that meets the approval of others in his social world. This is probably the dynamic which explains the adaptive load selected by school teachers. The only solution to this dilemma would appear to be a concert of autonomous professional, or those who want to be. We may start people down the road of commitment to professional autonomy, give them the desire to develop an integrative self and communicate this to others in all inter-personal relationships, but we may only be able to maintain this commitment by providing an ongoing experience such as the one described in the previous section. At a time when social machinery is molding man into a servant of the machine, reducing the human condition to congeries of artificial relationships, all in the interest of effeciency, our task is most difficult. Yet the task must be undertaken for teachers can produce the future man. There is no necessity for the teachers of our future, the instructors of our progeny, to the alienated. Human intervention, on a new bureaucratized basis, is still theoretically possible.

Chapter Thirteen

The Teacher-Scholar

We have already dealt heavily with several aspects of the teacher as a scholar.

As a curriculum-maker and an institutional decision-maker, we have seen the teacher as a student of an academic discipline and of the ways it is approached for teaching.

Our teacher is a student of teaching. He studies learner, society, subject matter, theories of learning and teaching, and he brings these together in his study of teaching as a process.

In addition, he studies the school as a social system. With Smith, he is a Microethnographer, burrowing about in the shifting social scene of the school.

This component consists of two simply-organized sub-components, each of which persists in some form throughout the program and is designed to increase the teacher's capacity for general scholarship. The first is designed to increase his capacity to study the world of the child. The second is designed to increase his ability to study the teaching-learning process.

Chapter thirteen includes three sections. Chapter Thirteen-A very briefly suggests the structure for "Studying the World of the Learner."

Chapter Thirteen-B describes "The Study of Teaching."

Appendix thirteen describes Edmund Sullivan's approach to the substance of "Studying the World of the Learner".

Chapter Thirteen-A

Studying the World of the Learner

In order to reach into the world of the learner the teacher needs to control ways of studying the learner--of looking at his external behavior and conceptualizing or intelligently speculating on the meaning of his behavior.

Especially, the teacher needs to employ conceptual systems that help him understand two kinds of things: how people develop and how their development can be facilitated.

The Processes

This sub-component focuses on the processes by which the teacher studies individual differences in human beings and relates what he finds to the development of teaching strategies.

The source paper by Sullivan described the area so well that it is reproduced in full as the appendix to this chapter (13 - B). Sullivan describes the processes by which developmental theories can be used to conceptualize individual differences and analyze problems involved in teaching strategies. His work is so thorough that it will stand as the description of the processes.

The Behavioral Objectives

The teacher will know at least two theoretical models for studying human development and/or learning and will apply these to:

a. study the individual differences of children
b. make judgments about the teaching strategies that will help these children grown in particular ways.

Each educational-psychology faculty will have its own ideas about the theoretical stances that should be used. Some will select a cognitively-oriented theory (as Piaget) and balance it with an affective emphasis (as Erikson). Others may prefer two theories which deal in the same domain but whose contrasting structure is interesting. The possibilities are really endless. Sullivan's paper "thinks out loud" very effectively about solutions to the problem of selection.

The Rationale

The rationale is simply that the theoretical study should be embedded in research activity. If the teacher-candidates were to deal with paradigms for studying individual differences without conducting systematic research, the study would probably have meaning for few of them.

Also, the conduct of research makes clear the nature of knowledge in the field--the hypothetical, imperfect nature of constructs in the social sciences.

The Means

The means are very simple. The inquiry group studies theory and research in the domains selected and then "tries on" the theoretical models by carrying on small scale research during the tutorial phase of the contact laboratory. For example, if they are studying children using the "conceptual systems" models described in the appendix the Chapter Eleven, "The Child and the Real World," the members of the inquiry group would use the research devices described by Hunt and Schroder to study the children and develop teaching strategies which, hypothetically, will be related to individual differences.

Hence, the component can begin shortly after the beginning of the second phase of the contact laboratory and consists of reading and seminars, alternated with research conducted by the feedback teams. This work can be made compatible with research on teaching strategies and decision-making, but the seminars need to be counseled by people competent in psychology.

The general pattern of study should continue into internship, periodically, and thence become part of the continuing education of the teacher.

Sullivan's paper follows immediately as an example of the kind of reasoning that leads to a successful component of this type.

Chapter Thirteen-B

The Study of Teaching

To learn to teach and particularly to learn to innovate in teaching without also learning to study what one was doing could lead to all manner of disaster. Hence we include components like this one which, while they may function to help the teacher in the short term, are intended to help him in the long run by equipping him to study what he is doing and to improve it by a systematic and scholarly method.

In particular this sub-component links the teacher to one of the most extensive developments in educational research that has taken place during this last twenty years--a particularly wide and useful range of research. The component itself is quite long, extending from the early days of the program throughout the continuing phase of teacher education.

The Processes

The processes are those of analyzing teaching and learning in such a way that the behavior of the teacher, as he interacts with his learner, can be conceptualized and related to the behavior of the learner. The task is made difficult by the fact that there are many points of view from which one can conceptualize teaching and learning. Moreover these points of view are not equivalent. They have advantages for particular purposes.

The best known up to now most useful ways were developed by behaviorists who are quite willing to subject human behavior to minute analysis. Many of the people who are entering teaching however are not of the behaviorist turn of mind. The processes of breaking down rather large behaviors into small fragments that are then resynthesized and interpreted for meaning grates against them. Those who have struggled to teach young teachers how to analyze teaching (Medley, Mitzel[1], Allen[2], Amidon[3], Flanders[4], and the present author[5]) have encountered severe resistance on the part of many teachers and student teachers who feel that the process of analyzing teaching in a behavioristic way somehow takes away from the dignity of teaching. The behaviorist, on the other hand, feels that the process of analysis is essential, and that the more global ways of looking at teaching obscure many details and prevent a true assessment of the effect of teacher on learner and vice versa.

Consequently, the process of analyzing teaching and learning often involves for the novice teacher the acceptance (at least for the purpose of analysis) of a behaviorist point of view which is foreign to his orientation. He must master the processes by which teaching behaviors are categorized into meaningful units and learn to combine these with processes for analyzing pupil response to teacher behavior.

Four basic conceptualizations have been used in recent years of analyzing teaching.

First, Anderson and Brewer,[6] Medley and Mitzel,[7] Flanders[8] and several others have devised systems for analyzing teaching in terms of the social climate of the classroom. Particularly, their systems focus on the amount of teacher control in the classroom situation compared with the amount of teacher behavior that facilitates teacher participation. Flanders[9] has referred to this as the difference between directness and indirectness in teacher behavior. Anderson and Brewer[10] refer to it as domination and integration. This way of conceptualizing teacher behavior has been used particularly to investigate the consequences of various social climates on pupil behavior. For example, Travers and Wallen and Wodtke[11] studied the relationship between directness, indirectness, and flexibility in teacher behavior and pupil achievement. Anderson and Brewer[13] investigated the extent to which the teacher's behavior was contagious in terms of its influence on the pupils.

Flanders,[14] Amidon,[15] and Medley and Mitzel[16] have followed up on this work by teaching teachers how to analyze their behavior according to the directness-indirectness dimension and helped them to try to change their behavior along this dimension so that they would be able to manifest a dominative or integrative pattern at will. Variously, these investigators have helped the teacher to look at tape recordings or television tape recordings of his behavior, to analyze them according to the dominative-integrative dimension and to modify teaching patterns.

Second, Gallagher and Aschner[17] have used a very different type of process for analyzing behavior. They developed a system for analyzing teaching according to cognitive operations or levels. Some teachers' questions imply a high order of thinking. If answered in kind, they induce a youngster to engage in the building of theory. The process developed by Gallagher and Aschner is useful for looking at the relationships between cognitive level of pupil behavior and teacher behavior.

Third, Arno Bellack[18] has taken a unique approach to the analysis of classroom discourse. He looks at it in terms of the ritualization of patterns within the classroom--of the game-like character of classroom interaction patterns. In research on social studies classrooms Bellack found that the patterns in classroom discourse frequently seems to be a kind of ritual dance. The pupils and teachers played relatively circumscribed roles that were repeated over and over again in the course of a teaching episode. The evidence suggests that once this "game" is well established, it may be extremely difficult to change it. The procedures that Bellack has developed are useful for characterizing the ingrained patterns of interchange.

Fourth, Joyce[19] and his associates have used yet another base for looking at classroom behavior. The Joyce system characterizes teaching in terms of four dimensions: the rewards and punishments in the classroom, the ways that information is handled during interactive teaching, the ways that procedures are developed, and the kinds of teacher-pupil behavior that are used to maintain the classroom as a social system. The procedures that Joyce and his associates have used are useful because they provide a multi-dimensional look at teaching, one that characterizes the complexity of the classroom and permits a simultaneous examination of many aspects of teacher behavior and many aspects of pupil behavior.

The four systems above, once mastered, provide the teacher with the essential tools to create systems of his own, analyzing teacher and pupil behavior along dimensions that he selects. Thus equipped, the teacher is in a position to analyze his own behavior and that of his peers and to judge the effects in terms of the responses of children. Similarly, he is in a position to analyze the discourse of pupils so that he can look at them in terms of possible teacher behaviors that might affect them. For example, the use of the Gallagher and Aschner system or a derivative therefrom would enable the teacher to characterize the level of thinking in a pupil's communication, to set goals in terms of teacher behavior that would be likely to be effective in terms of that level, and then to carry on an investigation to find out if the effects did indeed take place. At the same time the teacher can design studies to examine his own behavior more thoroughly and to gauge the results of attempts to change his own behavior. Using television and audio tape recordings the teacher should be able to develop a systematic program for studying and improving his teaching.

There has been a great deal of research on attempts to teach teachers the processes that are being described here and this research will be identified and discussed to some extent in the section dealing with the rationale of the Component.

The Behavioral Objectives

The behavioral objectives of this sub-component are somewhat sequential. That is the ones that are identified first probably need to be achieved before the later ones, but the sequence is not absolutely essential. Furthermore, there is more than one way of carrying on the component and to some extent the sequence should vary depending on the means that are emphasized.

Level One Objectives

Understands the rationale of the Flanders-Amidon, Gallagher-Aschner, Bellack and Joyce-Harootunian systems for analyzing the verbal behavior of teachers.

Applies the above four systems to the analysis of verbal discourse in classrooms (including both teacher and pupil behavior.)

Applies the above systems to the analysis of his own behavior while he is interacting with children.

Level Two Objectives

Sets goals with other teachers for changing their teaching patterns expressed in terms of one or more of the above systems.

Designs experiments and employs the above techniques. (i.e.: Makes and tests hypotheses about effects of teacher behavior on pupil response.)

Level Three Objectives

Designs original systems for analyzing teacher and pupil responses to teaching.

Employs his own systems to design experiments to analyze teacher-pupil interaction.

Level Four Objectives

Employs the above systems and those that he designs with other teachers to analyze his teaching and that of his fellow teachers and sets goals for improvement in their behavior. As indicated above, the objectives ordinarily will be achieved by level. However teachers might start at level four with practical problems with which they wish to study and in the course of examining those practical problems achieve the other objectives.

The Rationale of the Component

There have been a great many studies of the attempts to teach teachers how to analyze their behavior and that of children by using the behavioristic systems which have been identified above and which form the substantive basis for this component.

Studies by Flanders,[21] Hughes,[22] Bellack[23] and others[24] have indicated that many teachers in the classroom are quite controlling and are also quite limited in their behavioral repertoire. Teaching styles appear in many cases to be characterized by stability and to be so remarkably similar so that these classrooms fit Bellack's characterization. (As "games" in which pupils and teachers alternate as players with relatively stable roles.) Led by Flanders, Amidon, and Hough, there have been many attempts to teach teachers to research their behavior and to improve it as a result of the study. Precis of these studies appear in the Appendix of this component. Allen and his associates have experimented with various methods of providing feedback to teachers in "micro-teaching" laboratories, where the teacher repeatedly teaches the same lesson, focusing on specific teaching maneuvers until he learns it. Altogether the research indicates that teachers can learn behavioral systems for analyzing teaching and pupil responses to teaching, that they can set goals for the improvement of their teaching behavior in terms of these, and that they can also help other teachers to improve their behavior. The use of television tape and also audio tape helps greatly because it provides a record that can be gone over many times, so that even if several teachers observe a live lesson they can go over tapes afterwards as many times as are needed in order to establish the facts of the situation.

To my knowledge there has been no research on procedures for teaching teachers to develop their own systems except the work that was carried on by Joyce and Hodger at the University of Chicago. Joyce's students mastered his system, learned something of several of the others and then proceeded to develop their own ways of looking at teaching. This was part of a program which was called Instructional Flexibility Training, but was really centered on research as much as instruction. Cogan has developed an approach which begins with the analysis of teaching episodes with each participant developing his own system right from the beginning, but he is reported very little research.

Amidon and Hunter have reported a very interesting case method in which teachers concentrate on various kinds of problems in the classroom using the Flanders-Amidon system to analyze their behavior and that of the students as they attempt to solve their problems.

Whereas most of this research and program development has been conducted in the course of the attempts to change the clinical behavior of teachers, the present component is designed to give teachers research skills that they can apply to their own teaching and that of their fellow students. Procedures for building clinical competence are contained in the Interactive Teaching Component.

The rationale is straight-forward and logical but is not based on any theoretical position. It relies on the research that indicates that teachers can learn to do the kind of analysis that is required and apply that analysis to their own teaching and the development of experiments of their own teaching.

The components simply begins with an exposure to these several systems of analyzing teaching. This exposure is carried on in terms of their own teaching. The candidates operate in feedback teams which start right off analyzing their own teaching. They read the theoretical development of the four basic category systems, apply them to their teaching and begin to construct experiments to determine pupil reaction to certain kinds of teacher behavior. They analyze each other's teaching, and proceed to develop their own systems for analyzing teaching. They translate theoretical positions on education into systems for analyzing behavioral elements in teaching and to the development of experiments on their own behavior.

The entire process is public to insure that the candidates, from the beginning of their training, assume the collegial role of a student of teaching as well as that of a teacher. This helps also to establish from the outset of the program that teaching is a public rather than a private matter; in the analogy of the surgeon who does not perform operations alone but always in view of his peers who assist him in the performance of his duties and in the analysis of the outcomes.

That the public analysis of teaching can cause discomfort, especially in the initial stages,is beyond dispute. The antidote to this is the solidarity of the reference group which is established in the inquiry groups and the feedback teams. In other words, we are counting on warmth and interest in mutual development to provide the young teacher with the support that he needs to sustain analysis in domains of his performance where he will feel vulnerable and defenseless. The Innovation component has been designed specifically to provide group support and attention to the individual personality of each teacher in order to bolster him in his uncomfortable moments.

As in the case of all other components this one employs the cooperative inquiry teaching strategy and the differential training model is used to provide for individual differences and to direct the component in such a way as to capitalize on the accessibility characteristics of the candidates.

The Means of the Component

The means flow directly from the rationale and are straightforward. They are described in phases which correspond to the levels of behavioral objectives described above.

The component begins by orienting the inquiry group to the four phases that make up the Research Teaching Sub-Component. (In the event that the sub-component is broken up in such a way that the four phases are administered at different points during the teacher education program the inquiry group will have to be organized at the beginning of each phase.) In the course of the orientation, candidates should read Gagés Handbook of Research of Teaching, Bellack's The Language of the Classroom, Amidon and Hunter's Improving Teaching, Joyce and Harootunian's The Structure of Teaching, and Mirrors for Behavior. These provide an overview of methodologies used to study teaching and learning and provide the theoretical rationale for the four systems that will provide substantive basis of the component.

Phase One

During much of phase one the candidates should work in their feedback teams. Tutorial or small group teaching situations should be arranged and the audio tape recorders and television tape equipment should be available. Each feedback team and members of each feedback team should teach youngsters and record episodes with audio or television tape. The team should then engage in the analysis of the episodes using the four systems. It is recommended that one system be taught at a time. However, this is a matter of style. There is no inherent reason why a feedback should not engage in learning all four systems simultaneously, if they wish and are able to do so. The discussion should emphasize the effects of using the different frames of reference to analyze teaching, since the different systems will reveal very different things about the episodes. The feedback team should persist in the analysis until they have achieved the behavioral objectives, which are identified at level one.. The members of each group should be reasonably reliable with one another in the use of the measures.

In the course of this analysis each group should begin to conduct little experiments using the systems. For example, if one of the students finds out that he generally is fairly "direct" in terms of Flanders system he might begin to experiment with more indirect methods and see what effect that has on quantity of student talk that is generated and the kinds of difficulties he runs into as he tries to alter his style. Similarly, one of the members of the group might concentrate on asking "higher order" questions in terms of the Gallagher-Aschner system, and observe the kinds of pupil responses (frequently pupils do not respond at the higher level for quite some time and this can generate some very interesting small problems.)

Phase Two

During phase two candidates should begin to engage in the study of particular problems and generate their own systems as they go along. A good source of problems is in Amidon and Hunter's Improving Teaching. For example, one feedback group that the principal investigator has worked with categorized learners according to Piaget's levels of cognitive development (See Chapter Thirteen-B) and then attempted to see whether pupils who were identified as pre-abstract in the reasoning patterns were able to respond to questions designed to induce them to build abstract categories. None of the four systems above provided an adequate research tool but the Gallagher-Aschner system provided clues as to how one might be created. The candidates generated their own scheme and carried on several investigations. Similarly another team attempted to alter their reinforcement patterns so as to encourage divergent behavior by the children, an idea which they conceived after reading Wallach and Cogan's Modes of Thinking in Young Children. They adapted Joyce's system and looked at the reward and punishment patterns and the effect as described above. This phase should be extended until students are able to conduct this kind of small scale study as an ordinary part of their teaching.

Phase Three

In the third phase the chief activity is the application of the systems in the study of teaching strategies. (See Chapter Ten) For example, the inductive teaching strategy which was derived from Taba's work requires particular questioning patterns during several phases of the strategy. The students can study what it takes to produce those questioning patterns and then look to see whether the pupil's behavior responds in accordance with the intention of the questioning. Questions, for example, control the syntax of the inductive strategy and they are critical in its execution. It is important to learn what kinds of responses one gets from pupils, for if the responses are not in kind with the questions then the lessons will not move as planned. Similarly the cooperative inquiry strategy derived from Thelan's work is amenable to study by Joyce-Hartoonian system and to some extent by the Flanders system. The inquiry training strategy derived from Suchman's work is amenable to study by Bellack's system in as much as a particular kind of language game is actually desired and as pupils are to move from phase to phase the "game" changes.

All of the strategies of teaching should generate problems like these and as students learn to turn other theoretical stances on teaching into teaching strategies the possibilities are endless.

The phase component is open-ended. It should be continued throughout the teacher's career.

Phase Four

Phase four occurs parallel to phase three. The characteristic activity is the use of the behavioral analysis of teaching in the teaching laboratories to help teachers to analyze and improve their behavior. Generally the activities begin with a problem. The teacher, for example, wishes a diagnosis of his teaching. His feedback team analyzes his teaching using the systems they have been taught or ones they have derived for the purpose. The teacher sets goals for his improvement and his colleagues repeatedly observe him, helping him develop the new elements in his repertoire. This type of activity should also be engaged in throughout continuing education.

The Administration of the Component

Like the rationale and the means the administration of the component is fairly straight-forward. It requires organizing the inquiry groups and the feedback teams, explaining the rationale of the component and the means that can be used to record teaching episodes. Several administration patterns are possible. For example, phase one might be designed as a separate course and be placed in the program with phases two, three and four coming much later. Or the four phases might be integrated. The component can actually be embedded in a very traditional student teaching training program but it will probably cause endless trouble unless there is extensive training of cooperating teachers. The candidates need to be free to carry on the kind of experiments we have been describing. This means that they need to be able to conceive their student teaching and internship encounters with children as experimental encounters and that their behavior and that of the children be submitted to close scrutiny. If opportunity for this analysis is not provided, the component will not be successfully administered. The role of the contact laboratory is essential.

Provisions for Feedback and Differential Training

Because of the extreme "behaviorality" of this component the feedback system is fairly easy to develop and administer. In phase one classroom episodes can be recorded and presented to the feedback groups to determine whether they are able to apply the four systems in analyzing the episodes. Phase two can be evaluated by providing episodes and giving students the opportunity to apply their own systems and to explain the results of the application. In phases two, three and four students can submit "laboratory" reports on studies they conduct. These can be presented to the inquiry groups and to meetings of several inquiry groups that are concerned with the same kind of problems.

The differential training model is equally easy to administer with respect to competency level. In the first two phases the candidates can easily observe their own performance and increase practice or cease it. In case of the third and fourth phases faculty members can judge whether the student has been able to develop testable hypotheses and apply an appropriate system to test the hypothesis. With respect to cognitive orientation the faculty counselor can vary the amount of structure that is given to the groups. Some groups will need a great deal of direct instruction in the systems for analyzing teaching and they will need to achieve a high amount of reliability in order to satisfy their need for structure. Other groups will proceed very quickly to the inventions of their own systems and won't want to be fettered by systems developed by others. The faculty member should modulate his behavior accordingly. Moderate accomodation can also be made to candidates' value preferences. Some students will prefer to work with systems like the Flanders systems , and look at the social climate of the classroom. Others will prefer the cognitive orientation of the Gallagher-Aschner system, the logical system of Bellack or the multi-dimensional system developed by Joyce and Harootunian. This split is likely to be most apparent between the Flander's system and the other systems with the affective-oriented candidates preferring one of the others. The faculty member can easily capitalize on this value orientation. He has no reason for caring which system they begin with and he should take advantage of the academically oriented by beginning with one of the others.

With respect to feedback preference the faculty member simply modulates the amounts to which he participates in feedback according to candidates' needs for authority in the situation. The principal investigator has worked some groups simply by explaining what might be done to the students, who then picked up the ball and carried it. In other cases he has needed to lead people very slowly and very carefully providing feedback himself all along the way.

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Appendix: Chapter Thirteen

The Role of Inter- and Intra-Age Individual Differences in Planning Teacher Training Programs[1]

Edmund V. Sullivan
Ontario Institute for Studies in Education

INTRODUCTION

My task in this chapter is to examine the effects of inter-age individual differences (i.e., developmental differences across ages) and intra-age student individual differences within age as they relate to differential teaching strategies. In more concrete terms, the chapter will address itself to two main questions:

> 1) When are children developmentally different enough that very different teaching behavior or training environments are necessary in order to promote their growth; and as a corollary, when are the differences in training environment or teaching strategy so great that it is not reasonable to expect one adult human being to span the gap?
>
> 2) Holding age constant and barring extreme physical disability (e.g., blindness, deafness or severe brain damage) are children of any given age level so different from each other that we cannot imagine the same person teaching all of them or at least doing the same kind of teaching within the same domain to all of them?

In attempting to address myself to these questions, I will present a model for discussing intra- and inter-age individual differences as they relate to differential teaching environments. Then, in more specific detail, the model will examine a stage formulation of development centering around the first question of inter-age individual differences. The second question on contemporaneous intra-age individual differences will then be explored by means of a "thought experiment" (Kuhn, 1964) which will help to illustrate the complex problems that this model presents.

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As the chapter proceeds under this format, you will realize that the questions as originally formulated are somewhat undermined. This occurs because the normal model for analyzing psychological individual differences, when explored in detail, reveals severe inadequacies when pressed for its educational implications in teacher training programs. It is evident that there is no problem in demonstrating intra- and inter-age individual differences because, as every psychologist has experienced for himself, each time he puts his measuring instruments to a population, he inevitably finds there are individual differences within that population. The practical educational question is "what differences in the population should make a difference in teacher programming?" This inevitably takes us outside of the domain of descriptive psychology, since the question is a prescriptive moral one. In a democratic society, our moral prescriptions for certain types of educational outcomes should help us determine what types of individual differences should make a difference in teaching programs. I do not, by this, wish to sidestep the question but simply put it in its correct perspective. It must be kept in mind that developmental psychology is a pure, as opposed to an applied, science and its normative findings may yield to a variety of educational prescriptions.

> Granted that research application is a complex process, there are a number of suggestions which can be made to those who wish to make practical use of scientific data. It needs to be understood, first, that the utilization of research must be systematic and imaginative. Those teachers who use research successfully are seldom just informed' about it. While passively absorbed information occasionally helps in making practical decisions, payoff is likely to be much greater if ideas are actively ferreted from research and are continually put to use. Research is most properly a springboard or takeoff point, for practical innovations. In fact, those practitioners who seek to find recipes in basic research are likely to be disappointed (Hartup and Smothergill, 1967, p.3).

In many instances, research shapes expectations about children; suggests teaching procedures; and assists in the selection of curriculum content (Hartup and Smothergill, 1967). However, this may actually serve as a blinder upon the way teaching may be done, since there are probably many instances where research indicates strategies different than the ones that are initially thought appropriate. Thus, it could be argued for example, in the case of Piaget's normative data, that they are partially reflections of the present school practices and should not necessarily provide prescriptions for future educational planning.

Keeping these reservations in mind concerning the limitations of extrapolation from psychological data, the chapter proceeds with the following basic assumptions concerning the impact of individual differences: (1) It is assumed that it is for teacher training programs in North America and more specifically the United States. From this perspective, I anticipate rather far-reaching psychological changes in this society in the latter part of this century. This presumes that there will be a significant movement in the society dealing with the problems of the poor* which will bring about a new integration in the society and as a result, new individual differences; (2) It is assumed that the present way of conceptualizing "individual differences" in the schools will tend to hinder educational innovations and maintain the status quo. Thus, dividing children for differential treatment on the basis of high-intelligence - low-intelligence - high-verbal - low-verbal; middle-class - lower-class, etc., is a subtle way of proliferating the presently existing segregation in the society; (3) it is not necessary in any one particular classroom to have a single set of achievement or process outcomes; the only restraint as a goal is the achievement of problem-solving capacities which have to deal with a diversity of problems which accrue from a diversity of individual differences. This assumption is important if we realize that at present:

> Most tactics the school uses are intended to minimize the nuisance of individual differences so that it can go on teaching the same unaltered course. This is true also of remedial instruction, which adds on to the common program, rather than redesigning it
> Remedial work takes it for granted that the classroom work is largely a fixed program (Cronbach, 1967, p.27).

Cronbach (1967) suggests that we should make changes to suit "individual differences" on the basis of research. To the extent that this is possible, I have no objection. However, even where research is lacking, changes may be attempted when present educational practices are antithetical and incongruous with objectives of a democratic society. The evidence on

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*Better yet, the problems of the wealthy.

"individual differences" is never all in, nor the research completed, but as Allport pointed out in his book, *The Nature of Prejudice*, the evidence on prejudice is never complete but we still must operate on the moral presuppositions of a democratic society. The same conclusion can be made concerning "individual differences" because it presents a complex and confused picture with ever accumulating data. Let us now proceed to develop an initial model for conceptualizing these individual differences (i.e., inter- and intra-age individual differences) and their corresponding projections of differential teaching situations.

TEACHER-STUDENT INTERACTION MODEL

The Paradigm

In a provocative analysis of the history of scientific theory and methods, Kuhn (1962) develops the thesis that the scientific endeavour in a particular discipline is carried out within the constraints of a dominant "paradigm" or model. The "paradigm" is defined as a *consensus* that a particular general conception of the field is "correct" and fruitful to explore. Following from this consensus, certain problems are worthwhile to explore while others are considered meaningless; certain procedures are productive while others are not; and finally, specific kinds of data are relevant and others irrelevant.

A *scientific revolution* occurs when two paradigms come into competition with one another. The currently utilized paradigm fosters agreement in a particular area of inquiry and structures and interprets the history, the problems, and the evidence that are related to the field. A scientific revolution occurs when the current paradigm is challenged by a new conception which presents difficulties and conflicts for the older, established paradigm. In a sense, the new paradigm challenges the basic assumptions and world view of the older paradigm.

The history of the study of *individual differences* reveals two major paradigms which have competed with one another during the first half of our century. The early mental testing movement proceeded under the basic assumption that individual differences were *genetically determined* and that development of these differences was predetermined (Hunt, 1961). Concomitant with a strong emphasis on genetic factors, there was a serious underplaying of the role of the environment in effecting the course of development. This view received support, in the area of child development, in the theorizing of

Gesell and his followers (Gesell and Ilg, 1943). Gesell theorized that developmental sequences are relatively invariable in all areas of growth, evolve more or less spontaneously and inevitably, and show basic uniformities even in strikingly different cultural settings (Ausubel and Sullivan, 1970).

In the early twenties, this view of individual differences was directly challenged by the behaviorists (Watson, 1919). In brief, this school of thought treated the organism as a *tabula rasa* (i.e., a blank slate), minimizing the contributions of genetic endowment and of directional factors coming from within the individual and concomitantly emphasizing the pre-eminent role of the environment in determining the outcome of development (Ausubel and Sullivan, 1970). Individual differences from a behaviorist's viewpoint occurred because of differences in the environment, rather than inherited endowment.

The disparity between these competing paradigms prevailed in general until the mid-nineteen fifties, when a general convergence of these viewpoints led to an articulation of an *interactionist* approach to *individual differences*, which is now the prevailing paradigm. In the school setting, this paradigm prescribes *differential* training environments for individual differences in personality, motivational, and cognitive traits. Let us now turn to this dominant paradigm for some of its specific details.

Teacher-Student Interaction Model

The model which I am going to set down has been advanced by many other authors (e.g., Cronbach, 1957, 1967; Gagné, 1967; Jensen, 1967, 1968; Hunt, 1966a; Thelen, 1967, etc.). In its simplest form, it states that an individual's responses are a result of the *interaction* between the environment with the predispositional state of the organism (see Figure 1).

Translated into an educational context, the model indicates that dispositional states such as cognitive styles, stages of development, etc., enter into complex interactions with different types of environmental inputs to produce a wide variety of behaviors. This model has led to a variety of educational statements centering around the tailoring of specific types of teaching environments to deal with the individual differences in

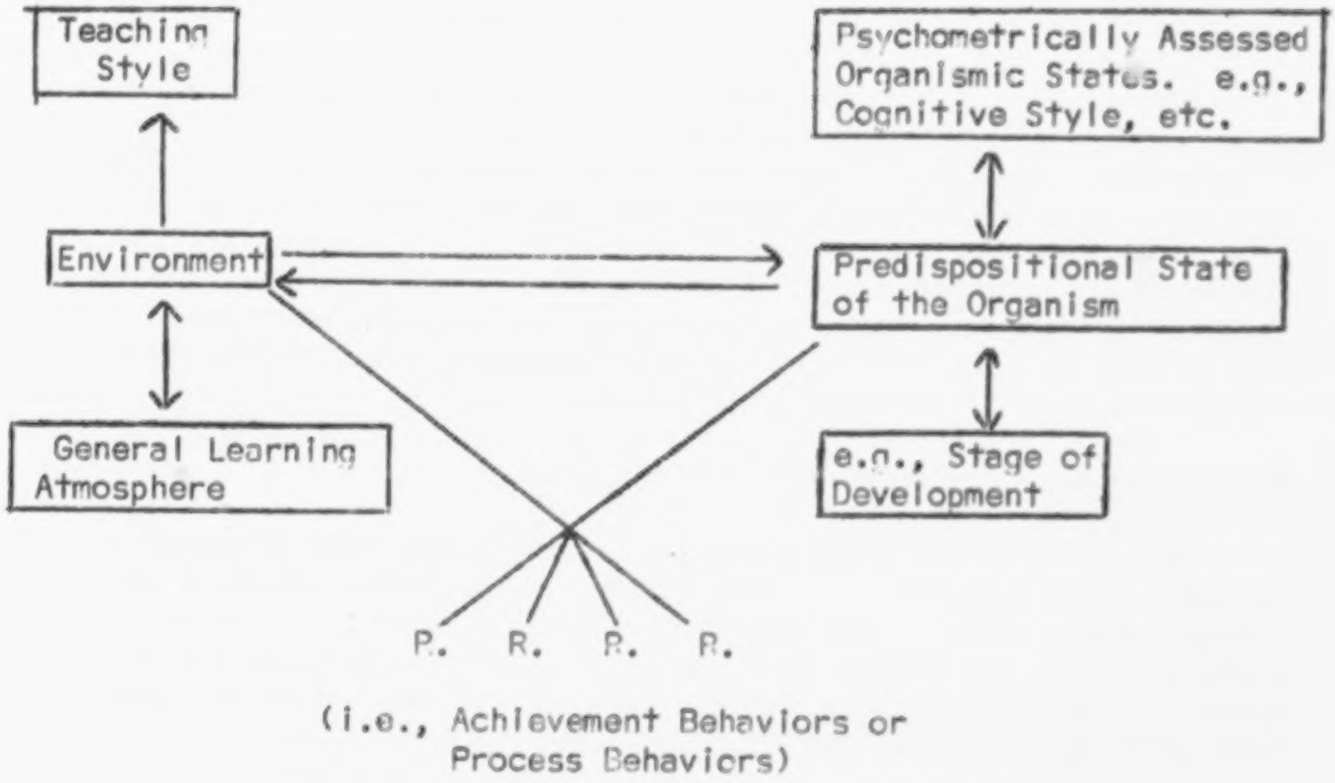
Teaching Style
Psychometrically Assessed Organismic States. e.g., Cognitive Style, etc.
Environment
Predispositional State of the Organism
General Learning Atmosphere
e.g., Stage of Development
R. R. R. R.
(i.e., Achievement Behaviors or Process Behaviors)

Figure I. Teacher-Student Interaction Model.

predispositional states of the students. Several examples are given here to see the practical educational import of the model.

(1) High-anxious students function better under a structured teaching situation, whereas Low-anxious students function better in an unstructured teaching situation.

(2) Children in the stage of *pre-operational* thought learn more when the material is presented in *concrete* terms whereas children in the stage of *formal operations* profit best with more abstract presentations of the learning material.

(3) Compulsive children do better than less compulsive children under structured conditions.

(4) Children with low conceptual ability function better under a *controlling* teacher style, whereas children of high-conceptual level function better under a reflective teacher style.

The previous examples are not unfamiliar, since they are a reflection of the current paradigm which attempts to deal with individual differences in educational settings*. The complexity of the model becomes more apparent, however, when we try to deal with it from both sides (i.e., environmental variables and biological variables). Psychologists have traditionally dealt more with genetic variables, while paying relatively minor attention to the variety of educational environments that could be generated. Reflecting this emphasis, it has been pointed out that psychologists have stressed theories of learning, that is, theories that deal with the way organisms learn, while ignoring theories of teaching which deal with the ways in which a person influences an organism to learn.

> Although theories of learning are necessary to the understanding, prediction, and control of the learning process, they cannot suffice in education. The good of education -- to engender learning in

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*One educational theorist persistently ignores this paradigm (Skinner, 1968). His major emphasis is on the environmental side of the model and its relation to response outcome.

> the most desirable and efficient ways possible -- would seem to require an additional science and technology of teaching. To satisfy the practical demands of education, theories of learning must be "stood on their head", so as to yield theories of teaching (Gage, 1964, p.269).

Although I would argue with many parts of the above statement, it nevertheless indicates the areas where psychologists have least explored. It may be one of the reasons why several psychologists have questioned the role and significance of psychology in education (Hilgard, 1964; Woodring, 1964). Alluding to the minor role of psychology in education, Woodring (1964) points out:

> In a few cases, perhaps, it does. In more cases, however, the new programs have been promoted with imagination, flair, and enthusiasm, but without a great deal of psychological sophistication. They are pushed by practical educators including a few vigorous school superintendents and principals who are eager to meet the new challenges facing the school and cannot wait until the psychologists have completed their research and have come to an agreement about the proper theoretical basis for classroom learning (p.298).

Unfortunately, even when innovations are attempted on the basis of psychological principles and know-how, they still fall far short of the mark for imaginative educators. Specifically, in relation to the attempts that have dealt with individual differences, it is clear that the vast majority of the studies have by and large emphasized superficial educational outcomes. Thus, certain types of "homogeneous groupings" are fostered to increase achievement behaviors (e.g., grade point, quantity of information, etc.), while ignoring process behaviors (see Figure 1).

> In overemphasizing the importance of the information a person learns, we pay considerably too little attention to the ways people learn to combine or use information for adaptive purposes. Given the same amount of information, different people use different conceptual rules in thinking, deciding, and interrelating (Schroder, Driver and Streufert, 1967, p. 3).

If we focus on "processing behaviors" over "achievement outcomes", the importance of intra-age and inter-age individual differences assumes much greater importance in educational research. However, as we shall see presently, the studies which have dealt with this problem in an interaction framework have tended to proliferate a myopic view of the ways individual differences can be handled and thus tend to support the present educational status quo. In order to analyze the full import of the first question posed in this paper, we now turn to the role of inter-age individual differences in the planning of teaching programs.

INTER-AGE INDIVIDUAL DIFFERENCES

Age as a Variable

The importance of age differences as an initial consideration for the recognition of individual differences appears to be a universal fact in all cultures. Age is a primary factor for treating growing individuals differently at different segments of the life cycle and is clearly seen in the different societal expectations that the culture imposes on an individual when considering his age. Thus, in such areas as social, moral, cognitive and emotional development, etc., the culture normally places different expectations if the individual is an infant as opposed to a middle-years child.

The educational question to be asked in this context is "when is a difference in age important enough to dictate a different type(s) of educational environment(s)?" Historically, the importance of the age variable has been recognized in education by the grouping of individuals according to their age level. From the point of view of developmental psychology, however, age is a rough first approximation for some interesting scientific observations. The fact is that, in all cultures, as children grow older, they demonstrate different quantitative and qualitative changes in behavior. The attempts to move to more sophisticated explanations for these changes with age have led to the development of stage theoretical constructs. The notion of stage is not unique to developmental psychology and has a long scientific and philosophical history. In many instances, its use in developmental psychology has simply been as a substitute term for age (Kessen, 1960, 1962), as for example Gesell and Ilg's (1943) use of the term stage, which appears simply to be a paraphrase for age. This type of usage, of course, gets us no further than the use of the term age.

There are many stage theoretical positions in psychology and it will be impossible here to discuss them in detail. The variety of stage theories represents the different theoretical interests of their proponents and one finds it being utilized in personality (e.g., Erikson, 1950; Freud, 1933; Harvey, Hunt and Schroder, 1961; Sullivan, Grant and Grant, 1957, etc.), moral (e.g., Piaget, 1932; Kohlberg, 1964) and cognitive theories (Bruner, 1966; Piaget, 1960; Werner, 1948), to name a few. For our purposes, the discussion of Piaget's stage theory of intellectual development will receive primary emphasis. This elimination is made for several reasons: (1) the discussion of several stage theorists would be the topic of a book which would be far beyond the scope of this chapter; (2) Piaget's stage theory is sophisticated enough that the reader can apply this analysis to other stage theory accounts; (3) his current popularity with educators makes him particularly interesting for this analysis, and finally, (4) a superficial interpretation of Piaget's stage theory leads to rather conservative status-quo educational programs (e.g., homogeneous age groupings for children; the importance of having special nursery, elementary and secondary school teachers).

In this section, I intend to develop a thesis which sees Piaget's theory interpreted in conventional educational programs and then an antithesis, couching Piaget's theory in the light of new programs which could be initiated. Before attempting this, however, it is necessary to make explicit some criteria for developmental stages and give a brief account of Piaget's stages.

Criteria for a Stage Construct

The term stage is a structural concept which in some way attempts to account for the different quantitative and qualitative behavior changes with age. Piaget (1960) describes cognitive development in terms of stages; this means that change in this area of development are due to qualitatively different structures (stages) which are changing as the individual grows older. In contrast to somatic and perceptual development this seems more amenable to a stage theory formulation. The criteria for stages have been defined by Inhelder (1962) and are as follows: (1) each stage involves a period of formation (genesis) and a period of attainment. Attainment is characterized by the progressive organization of a composite structure of mental operation; (2) each structure constitutes at the same time the attainment of one stage and the starting point of the next, of a new evolutionary process. Thus, structures can be said to be in a stable state and a transitional state at the same time; (3) the order of succession of stages is constant (e.g., the preoperational stage always occurs before the concrete operational stage). Ages of attainment can vary within certain limits as a function of factors of motivation, exercise, cultural milieu, etc., and finally, (4) the transition from an earlier to a later stage follows a law of implication analogous to the process of integration; preceding structures are subsumed and integrated into later structures. Thus, each stage is necessary in the framework of the more advanced stages.

As pointed out previously, a stage is an attempt to assess the structural characteristics of the organism which appears to change in ontogenesis. Age becomes a superficial variable in this dispensation; the underlying structural changes taking on greater prominence for explaining the changes which appear with age. We turn now to a description of Piaget's stage theory of intellectual development to make this discussion more concrete.

Piaget's Stage Description of Intellectual Development

Basic Concepts.

Piaget defines intelligence as a process of adaptation and organization. Adaptation is seen as an equilibration (equilibrium)* in the organism's interaction with its environment. Organization is a concept which is structural and this involves the constant organization, reorganization, and integration of what Piaget calls schemas. Schemas are defined as essentially repeatable, psychological units of intelligent action (Piaget, 1960). The best interpretation of this definition is that schemas are types of "programs" or "strategies" that the individual has at his disposal when interacting with the environment (Sullivan, 1967a).

Adaptation involves the two invariant processes of assimilation and accommodation. Assimilation is the incorporation of environment into present patterns of behavior. Accomodation is the change in the intellectual structures (schemas) which is necessary in order for the person to adjust to the demands which the external environment makes on the individual. Equilibration involves a balance between the two invariant processes of assimilation and accomodation. When imbalance occurs, the organism is forced to change its schemas (i.e., strategies) in order to adjust to the demands of the external environment (adaptation). When the organism attempts to adapt to the environment with the already existing schemas, assimilation is said to be in operation. The postulation of schemas as mental processes by which past experiences are stored and made partial determinants of present behavior is significant, because it implies that the organism perceives the environment in terms of its existing organization. Disequilibration or imbalance exists when assimilation is unsuccessful. Accommodation occurs as a result of disequilibration and the alteration or emergence of new schemas ensues. Cognitive development is marked by a series of equilibration-disequilibration states. Stages in Piaget's theory may be considered as particular sets of strategies (schemas) which are in a relative stage of equilibration at some point in the child's development. The development from one stage to the next in Piaget's framework involves a hierarchical organization of preceding and successive stages. Simply stated, the lower stage is coordinated and integrated into the next higher stage.

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*In a more recent article Piaget has expressed a preference for equilibration over equilibrium which he feels has a static connotation. For purposes of consistency, we will use the word equilibration (Piaget, 1965).

Stages. Piaget has delineated intellectual development as emerging through three main stages and also various substages*.

1) Sensory-Motor State (birth to approximately two years) involves simple structures (schemas) starting with the inborn reflex mechanisms which increasingly become altered and complicated by the child's interaction with his environment. Characteristically, the sensory-motor period is exemplified in those behaviors which are pre-verbal and are not mediated by signs and symbols. At birth, the child mediates with the world with inborn reflex schemas and has no conception of object permanence. The fact that the child lacks object permanence is an indication that he lacks at birth representative symbolic activity. During this period, the child is concerned with objects as objects. Thus, when a toy is hidden from his view, he shows no searching movements, since he has no internal representation of the objective world (i.e., object schemas) when

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*Piaget has outlined his stages differently from those stated above. This is not a discrepancy, however, since the different stage breakdowns are still concerned with the same observations.

not directly perceiving it. Gradually, object permanence develops through repeated experience with the environment. As the child constructs object permanence through experience, primitive concepts of space, time, causality, and intentionality, which were not present at birth, develop and are incorporated into present patterns of behavior.

2) Pre-operational Stage (2 to 7 years) is subdivided into the substages of preconceptual thought (2 to 4 years) and intuitive thought (4 to 7 years). In contrast to sensory-motor intelligence, adaptations during preconceptual thought appear to be mediated by structures (schemas) that indicate the presence of symbolic representative activity. This symbolic activity is seen in the child's "symbolic play", as well as his use of language. With the appearance of language, the objective world is now symbolized by a thought process which can be retained by the mind (i.e., primitive symbolic structures). Despite the fact that the child's world is mediated by signs and symbols, in the form of words and images, the child nevertheless operates in a world of preconcepts. In contrast to adult thought, which is characterized by inductive and deductive reasoning, the child's reasoning is transductive (preconceptual) since he makes no distinction between the general and the particular which is an essential part of time concepts. Transduction is a logic which moves from particular to particular instances. The transductive child demonstrates his logic in his uncertainty as to whether the same object is reappearing or that there are different objects in different times and places. For example, walking through the woods, the child does not know whether he sees a succession of different snails, or whether the same snail keeps reappearing. This is an example of what Piaget calls the preconcept.

Intuitive thought appears at approximately age four and marks the half way house between preconceptual thought and the more advanced stage of concrete operations. The thought structures (schemas) exemplified in this stage are illustrated in the following problem. The child is presented with two small glasses, A1 and A2, which are identically the same in height and width dimensions. The child places one bead in each glass until both are filled. The A2 is emptied into a taller but thinner glass B. The child in the preconceptual phase thinks that the amount of beads has changed in the process, even though they see no beads were removed or added. The child says there are more beads in B, since it is taller than A, or that there are more beads in A1, since it is wider than B. The child is centered on one aspect of the situation "height" or "width", and since the child cannot hold the centerings simultaneously, he is unable to solve the problem. The child in the "intuitive stage" still remains prelogical, but decenterings occur where previous centerings led to absurd conclusions. Thus, the child who estimates that there are more beads in the taller glass because the level has been raised, centers his attention on height and ignores width. If, however, the experimenter continues to empty the beads into the thinner and taller glasses, there will be a time when the child replies that there are fewer beads in the taller glass, since it is too narrow. This is an example of a transition from a single centering (preconceptual thought) to two successive centerings (intuitive thought). When the child is able to reason with respect to both factors at the same time, the child will, in fact, deduce "conservation", (i.e., state that the beads remain the same and only the glasses change). This simultaneous reasoning does not occur during this stage, and the above example indicates that there is neither deduction nor true logical operations; an error is simply corrected but the two relations are seen alternatively instead of simultaneously. All that occurs is an intuitive regulation and not a truly operational mechanism.

Finally, the difference between intuitive and operational thought is seen in the formation of classes. These interrogations involve the child's understanding of the cardinal ($3=1+1+1$) and ordinal ($3=2+1$) properties of number. Cardinal properties of number involve the ability to classify and combine classes. Piaget (1960) placed 20 beads in a box, the child acknowledging that they were all made of wood (this constituted a subclass A; while a small number were white in color (3), designated as subclass A1). In order to determine whether the child is capable of understanding an operation such as $A+A1=B$, the following question is asked: "In this box (all of the beads are visible), which are there more of, wooden beads, or brown beads?" (i.e., B or A). Piaget found that up to about 7 years, the child invariably replies that there are more brown beads, "since there are only three white ones." Then the child is asked further: "Are all the brown ones made of wood?" The child usually responds, "Yes". Piaget questions further: "If one takes away all the wooden beads and puts them in a second box, will there be any beads left in the first box?" Most children replied, "No, because they are all made of wood." The child is now asked the following question: "If the brown ones are taken away, will there be any beads left?" The child responds that, "Yes, the white ones." After this interrogation is finished, the original question is repeated. The child, during the phase, continues to state there are more brown beads than wooden ones, etc. The mechanism for this response is that the subject finds no difficulty in centering his attention on the whole Class B, or the subclass A and A1; however, he is unable to grasp both simultaneously, thus grasping the logical and mathematical truth that the whole is equal to the sum of its parts.

The problem of ordination or seriation remains to be solved by the child in concrete operational thought. Although the child is beginning to arrange things in a series, his ability at arranging is only "global" during the intuitive stage. The child is able to compare two members of a set within a series when they follow one another in a consecutive order. For example, the child knows that Monday comes after Sunday, that Thursday comes after Monday. When asked whether Thursday comes after Sunday, the child becomes confused. The operational thought, involving the seeing of logical relations between things and events that are arranged in a series is not yet possible to the child in the intuitive stage.

The stage of *operational thought* (7 through 16) commences with what Piaget (1965) deems as the advent of rational activity in the child. Up to this time, the child demonstrates a logic (transductive) which is quite different from the adult members of his species (i.e., induction and deduction). The ability to reason inductively and deductively is due to the presence of thought structures (schemas) which are labelled operations. *Operations* are defined as internalized actions which can return to their starting point, and which can be integrated with other actions also possessing this feature of reversibility (Piaget, 1960). Stated simply, operations are "mental acts", which were formerly actions which had reversible properties.

Concrete operational thought (7 through 11 years) is characterized as "concrete" because the starting point of the operation is always some real system of objects and relations that the child perceives, that is, the operations are carried out on concrete objects. The emergence of concrete operations is often a sudden phenomenon in development. Piaget (1960) attributes these operations to a sudden thawing out of intuitive structures which were up to now, more rigid, despite their progressive articulation.

In formulating the properties of concrete operations, it is necessary to outline five specific operations: (1) *Combinativity:* an operation where two classes may be combined into one comprehensive class which embraces them both, (i.e., $y + Y_1 = z$, or beads black + beads white = wooden beads);
(2) *Reversibility*: every logical or mathematical operation is reversible in the sense that there is an opposite operation which cancels it, (e.g., $4 + 3 = 7$, reversed to $7 - 4 = 3$). In this example, subtraction is the converse of addition.

Reversibility is also an operation where division is the converse of multiplication; (3) *Associativity*: an operation where several classes are combined, it makes no difference which will be combined first, (e.g., $[a+b]+c= a+[b+c]$); (4) *Identity*: an operation which can be nullified by combining it with its opposite (e.g., $+A-A=0$). Although these operations seem simple, the child is unable to do them before this state; (5) *Tautology*: an operation related to logical classifications. Here repetition of a proposition, classification, or relation, leaves them unchanged (e.g., $A<B$ and $A<B$: $A<B$).

Concrete operational structures (schemas) are analogous to particular operations which have been identified in mathematical and logical disciplines. Thus, the Piagetian thought structures at this stage are modelled after logico-mathematical operations. In order to understand what internal process brings about this transition from intuitive thought, it is necessary to see how concrete operational structures are brought to bear on the problems previously quoted in the intuitive stage.

In relation to this, consider again the conservation problem (i.e., the pouring of the beads from one glass to another). In the intuitive stage, one sees slow moving centerings and decenterings, such that the problem is first seen from one point of view (height) and then from another point of view (width). During the concrete operational stage, the child holds both centerings simultaneously, and thus deduces conservation. He explains his conviction by verbally pointing out that the quantity of beads in both glasses is the same, because if you poured it back into the other glass they would be the same height again (reversibility) or that they are the same now because they were the same when you started out (identity).

Conservation is not a unitary concept and manifests itself in several ways, and at different times. Conservation of discrete quantities (number) (i.e., where two equivalent groups of discrete objects in one-to-one correspondence are moved to a new arrangement wherein correspondence is not perceptually evident) occurs slightly before continuous quantity (substance). Conservation of *weight* (i.e., downward force of an object) and *volume* (i.e., the space occupied by an object) follow *quantity*, in that developmental order. Evidence confirming this sequential order of conservation has varied from Piaget's original findings (Almy *et al*., 1966; Elkind, 1961;

Feigenbaum, 1963; Kooistra, 1963; Lovell and Ogilvie, 1960). Thus, the principles of conservation do not hold in all systems or ideas, emerging later in some systems than in others. Reasoning during the concrete operational stage is tied to the child's concrete experience.

This limited reasoning is further seen in the class inclusion problem (e.g., brown beads - wooden beads problem). By age 8, the child understands class inclusion (combinatory operation) in the wooden beads experiment, yet does not solve a verbal test involving an identical structure until the age of formal operations. The separation which we see in concrete operations allows complex problem solving, yet there are horizontal separations (*décalages*). Most of the operations performed are only solvable at concrete levels and are not simultaneous for all ideas (e.g., substance, weight, and volume, etc.).

The substage of *formal operations* (11 to 16 years) marks the emergence of *vertical décalages,* that is, the ability to make vertical separations by solving problems at a level which transcends concrete experience (i.e., *horizontal décalage*). Formal thinking marks the completion of the child's emancipation from perception and action. In contrast to the concrete, action-oriented thought of the child, the adolescent thinker goes beyond the present and forms theories about everything. This thought is considered "reflective", since the adolescent reasons on the basis of purely formal assumptions. He can consider hypotheses as either true or false and work out inferences which would follow if they were true.

A good example of this is the problem of seriation between three terms presented at random or as propositions. "Edith is fairer than Susan; Edith is darker than Lily; who is darkest of the three?" This is a simple problem of seriation for a seven-year-old when presented in concrete form. When presented as verbal propositions, however, the problem is not solved until about 12 years of age. Most of the responses before 12 were as follows: Edith and Susan are fair; Edith and Lily are dark; therefore, Lily is darkest. Susan is the fairest, and Edith is in-between. In other words, the child of 10 cannot accomplish with formal problems what he could do with concrete problems of size at age 7. The cause of this difficulty is that the premises are given as pure verbal postulates and the conclusion is to be drawn without recourse to concrete operations.

The formal operational adolescent can make "logical experiments", not merely factual ones. Propositional logic enables the child to test the validity of statements by reference to their pure logical properties, rather than to their correspondence with the concrete empirical world. In other words, the adolescent is able to deal with the form of a proposition rather than the content.

In contrasting formal operations with concrete operations, Piaget (1960) points out that concrete reasoning concerns action or reality of first degree groupings of operations, (i.e., internalized actions that have become capable of combinations or reversal) whereas formal reasoning consists of reflecting on operations or on their results and consequently effecting a second degree grouping of operations (i.e., operations on operations). At the stage of formal operational thought, the adolescent is able to manipulate intellectually the hypothetical, and systematically evaluate a lengthy set of alternatives. He learns to deal with the logical relationships of Identity (I) Negation (N), Reciprocity (R), and Correlation (C), which permit him to deal with problems of proportionality, probability, permutations, and combinations. The operations just referred to are called the I.N.R.C. logical group.

In summary, Piaget's theory of intellectual development is an exciting panorama of unfolding abilities of the child seen in his ontogenetic evolution from infancy to adulthood. The first stage of sensory-motor development sees the first combination of perceptual experiences, the primitive development of object permanence which is implicit in the advent of notions of time, space, and causality. Conceptual thought follows an elaborate evolution starting with the development of imitative language, concrete imagery, and symbolic play activity. The concrete operational child begins to represent the world of empirical reality more symbolically rather than through action representation as seen in the preoperational stages. The formal operational child extends the world of empirical reality by representing the world not only as it is, but also as it could be (possibility). Abstract logic and mathematics are now at the child's disposal in dealing with problems. A compendium of research, both within and outside Piagetian tradition, reveals that as children increase in age, they tend to perceive the stimulus more in general, abstract, and categorical terms and less in tangible time-bound and particularized contexts (Ausubel and Sullivan, 1970). Furthermore, they demonstrate increasing ability to comprehend and manipulate abstract verbal symbols in relationships, and to employ abstract classificatory schemas; they are better able to understand ideational relationships without the benefit of direct, tangible experience, of concrete imagery, and of empirical exposure to numerous particular examples of a given concept or proposition (Ausubel and Sullivan, 1970). Finally, with increasing age, children tend to infer the properties of objects in their class membership, rather than from the direct experience of proximate, sensory data. They are more disposed to use remote and abstract rather than immediate and concrete criteria and attributes in classifying phenomena and to use abstract symbols rather than concrete imagery to represent emergent concepts (Ausubel and Sullivan, 1970).

Corresponding to these changes in cognitive development, we see similar trends across ages in social development. Young children have difficulty in understanding the perspectives of other people and preschoolers do poorly in perceptual role-taking tasks. During the middle years of childhood and adolescence, they become progressively more accurate in their guesses about what other people see, choose, and think (Flavell, 1967). Moral and value development show characteristic age changes; increasing age reveals children adopting less subjective and more objective approaches to value experiences. Thus, values are considered from a less personal and more detached point of view (i.e., greater ability to argue from the standpoint of a hypothetical premise, etc.) (Ausubel and Sullivan, 1970).

Thesis

Under the thesis, I will attempt to show how Piaget's stage theory fits into traditional pedagogy. Particularly relating to the question of individual differences across ages, traditional educational approaches have used stage theories such as Piaget's to provide differential curriculum programs for different stages of development (Sullivan, 1967b). The model or paradigm in Piaget's case, can be seen in Figure 2, in which changes in stage demand differential teaching programs. The pedagogical outcome of this model, in terms of differential teaching strategies for changes in stages, can lead to a justification of our present emphasis on homogeneous age grouping and critical-curriculum shifts (i.e., special nursery, elementary, and

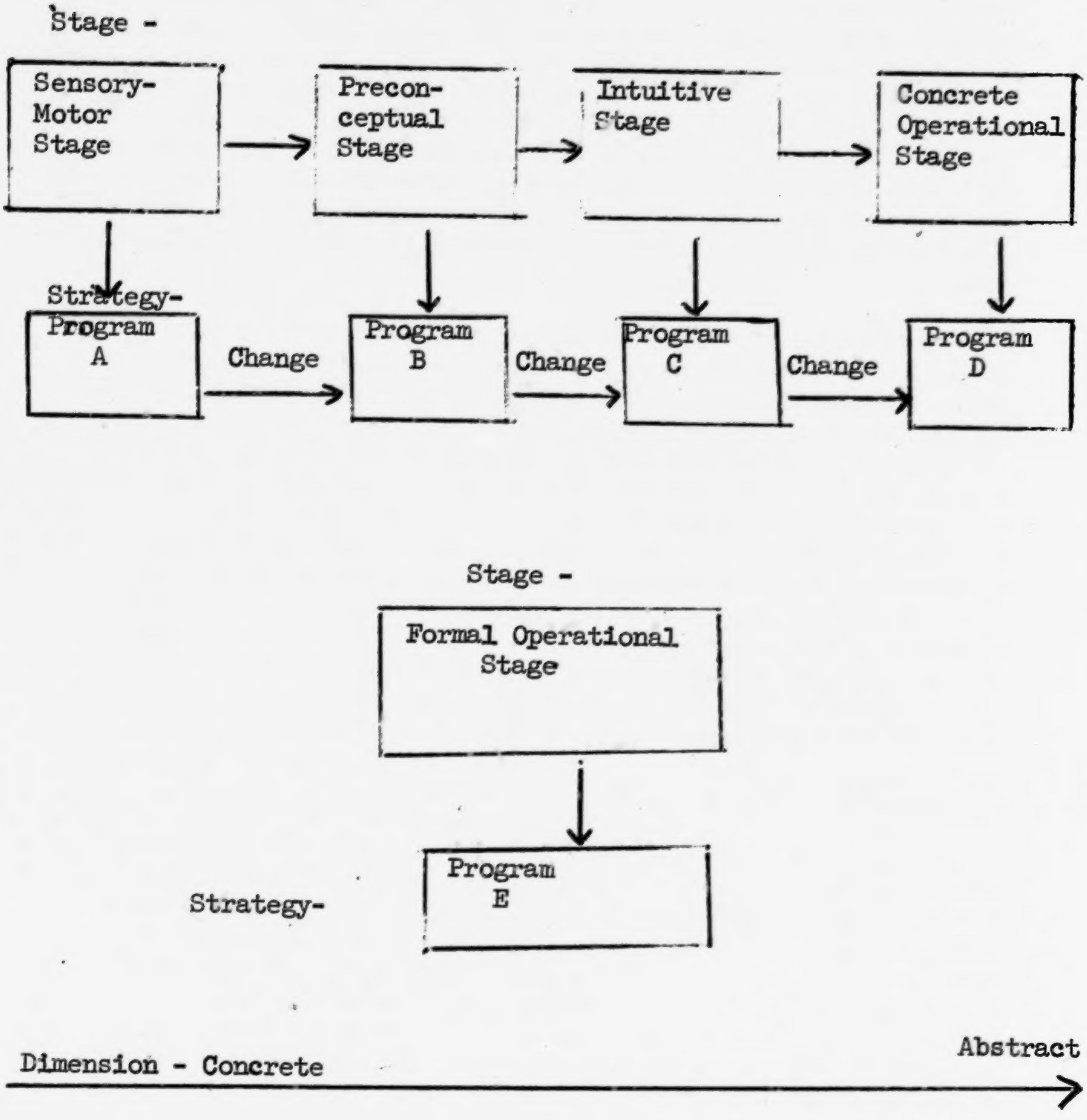
Stage -
Sensory-Motor Stage
Preconceptual Stage
Intuitive Stage
Concrete Operational Stage
Strategy-
Program A
Change
Program B
Change
Program C
Change
Program D
Stage -
Formal Operational Stage
Strategy-
Program E
Dimension - Concrete
Abstract

Figure 2. A conceptual model for differential teaching strategies relating to Piaget's stages of development.

secondary school curriculums). Consideration of the arguments for these types of emphasis in curriculum planning will come before antithetical argument are presented.

Homogeneous Age Grouping. Grouping children at specific age levels is a rather recent curriculum innovation, occurring in American education about the end of the nineteenth century. The talk about the "Little Red Schoolhouse" where children of all ages were grouped together for the teaching-learning situation, seems strangely archaic to the present generation. Nevertheless, if we canvassed older immigrants in our own population we would find that the vast majority of their education took place in similar "Red School Houses" in Europe.* The movement away from this type of setting was clearly designed in order to tailor the school situation to meet the obvious individual differences which occur across age spans.

Age grouping is now an institution, however, and there is something magical about grouping children according to their specific age levels. Implicitly, stage theories give a subtle justification for this type of grouping. If stages of development follow age norms, it is economical to group according to age, since there is a greater likelihood that children at the same age level will be functioning at the same stage of development. Most recently, Piaget's stage formulation has received a larger hearing because of its possible implications for the concept of readiness in the learning of cognitive tasks (Sullivan, 1967b). In this way, Piaget's stages of intellectual development are construed as demanding a certain age level breakdown as the roughest indicator of readiness for learning. The linkage of age with stage of development can be seen in the following quotation:

> Even if the child is fluent in his use of number words and can do rote counting, this does not allow us to conclude that he knows what he is talking about. There is even a danger of language becoming

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*Homogeneous age grouping occurred later in Europe when compared with American school systems.

> a substitute for thought. The wooden beads experiment, too, reveals that only at a certain stage (about 7 according to Piaget) do children realize that the part is never greater than the whole. Until they do, they are incapable of understanding addition or subtraction. To give the child the fullest help, we should know how far he has advanced, and what the next step will have to be (Crawford, 1960; pp. 133-134.)

More apparent than in the area of homogeneous age grouping, Piaget's stage formulation is frequently used and cited as a justification for critical-curriculum shifts.

Critical-Curriculum Shifts. The notion of critical-curriculum shifts occurring at certain times in the life cycle is a concept engrained in the American educational setup. The fact that nursery schools end at 5 years of age and elementary schools give way to secondary schools at about age twelve seems, to an American, a metaphysical reality. These critical age-sensitive curriculum changes are buttressed by the fact that the North American educational establishment is rather unified in its stress on the importance of these transition periods for major curriculum changes. Thus, one starts kindergarten and high school at approximately the same age across the United States and also in Canada. Europe, however, shows much greater diversity, possibly due to conflicting national interests. In spite of the fact that these critical curriculum shifts are idiosyncratic to our continent, it is nevertheless interesting to see how these established practices are justified in current psychological theorizing. Justification for the curriculum changes that take place between nursery and elementary schools and from thence into the high schools can be seen in the following interpretation of Piaget.

> Curriculum planners will have to take into account the work of Piaget on children's intellectual development. When the world is defined in terms of action linked concepts, then the child must encounter knowledge through his own actions. When he has constructed a system of concrete operations to deal with reality, the teacher must present her material in terms of specific concrete examples. When the formal stage is reached, however, theory is not only a possibility, but a necessary means of codification of experience and extending the use of the mind (Adler, 1963, p.35).

These changes in teaching strategy are based on the changes that take place between Piaget's stages of pre-operational, concrete operational and formal operational thought. It is interesting to note that they roughly take place at the periods of transition from nursery to elementary and elementary to secondary schools.

The shift that occurs between Piaget's pre-operational stage and concrete operational thought stage intuitively gives credence to the curriculum changes that take place from the nursery to the elementary school. This shirt is further justified by psychological research outside of the Piagetian tradition. White (1965) has summarized numerous psychological studies which seem to indicate a fairly important psychological change occurring between the ages of five and seven. This change in the child's characteristic way of learning appears to take place after age five; before this age the patterns of findings obtained with children resemble those obtained when animals are used in like procedures. After this age, the patterns of findings approximate that of human adults (i.e., the transition is from animal-like to human-like learning) (White, 1965). The change has frequently been attributed to a shift from perceptual to more conceptual modes of thinking (Bruner, 1966; Gollin, 1968; Wohlwill, 1962) and increasing use of language mediation (Kendler and Kendler, 1962; Kendler, 1963).

Similar interpretations of the shift that occurs between Piaget's concrete operational and formal operational thought have led to differential curriculum planning between the elementary school years and adolescence. For example, in the sequencing of subject matter in science curriculums much attention has been given to Piaget's theory which centers around the question of how concrete or abstract the learning experience must be at various stages of development (Sullivan, 1967b). Piaget's potential contribution stems from his postulation of a concrete-abstract dimension in cognitive development. Each stage in Piaget's theory constitutes a progressive movement from concrete modes of thought to more abstract forms. Thus, Peel (1964) uses Piaget's stage descriptions of concrete and formal operational thought as prescriptions for the sequencing of subject matter in science education. Peel derives from Piaget's theory the conclusion that science education in the primary schools should be based on experience in the formation of concepts. The concrete operational stage should be limited to what he calls describer thinking; propositional thinking and scientific explanation of properties, to the formal operational stage of thought. The achievement of formal operation allows the child to proceed to what he calls explainer thinking because explanation is a characteristic of propositional thought (i.e., formal operation). In a sense this gives some credibility for our curriculum shift from the elementary to the secondary school years. This is rather compelling evidence for the thesis. But are we possibly being duped by our own ethnocentrism? Let us look at the antithesis.

Antithesis

The arguments to be developed under the antithesis challenge the sacredness of homogeneous age grouping as well as the critical curriculum shifts that take place from nursery through secondary schools. The antithesis will not challenge the fact that as one increases age variability in the classroom, individual differences correspondingly increase. Furthermore, no challenge is made of the fact that as children grow older they deal with an increasing variety of tasks in a more abstract manner. Two preliminary considerations will first be discussed concerning the notion of intrinsic structure and the role of learning *vis à vis* stage of development in order to place the discussion in an educational perspective.

First, the use of the term "state of development" implicitly adheres to the notion that as age is changing, the organism has at its disposal different intrinsic structures which enable him to process information in different ways. In theory the concrete-abstract dimension that Piaget describes is attributed to these changing intrinsic structures or stages. The organism, in this dispensation, is not a mere tabula rasa but incorporates information into the system via these intrinsic structures. In order to assess the presence of a "stage", Piaget has deliberately questioned children on concepts that are spontaneously learned rather than directly taught in the school. If there are developmental differences in the way children view the world, it is wise to tap these structural differences by using concepts in which they cannot mimic adult responses. Thus, the use of questions which probe the child's spontaneous versus learned concepts guards against the child giving rote learned school information and, in this sense, enables one to see if there are differences between children's and adults' reasoning. Even a cursory reading of Piaget will establish the fact that this strategy has been a profitable endeavor.

The educational problem with a stage theory such as Piaget's is relating the notion of "intrinsic structure" to the ongoing teaching-learning situation. This linking of the educational strategy to stage of development is complicated by the fact that Piaget in his research has attempted to keep them separate. One of the difficult educational dilemmas with Piaget is the tremendous stress that he places on spontaneous concept formation, while paying relatively minor attention to the formal concepts that are learned in school (Vygotsky, 1962). In this sense, the theory ignores the interaction between school learned concepts and intrinsic structure (stage). With Piaget "stage of development" effects the learning of school concepts but the opposite interaction does not obtain (Sullivan, 1967b). As Wohlwill (1962) points out:

> Piaget, as is well known, tends to ignore the effects of antecedent conditions and the environmental variables in development, relegating them to a place definitely subsidiary in importance to the unfolding of internal structures. This does not mean that he advocates a strict nativist position, for he has frequently emphasized the continual interaction between external and internal forces. Nevertheless, biological orientation and interest in structure leads him to take external factors for granted and to regard the form which this interaction takes as largely predetermined from the start. The only problem, then, is that of specifying the successful stages through which the organism passes; little leeway is left for differential manifestation of external conditions (p.104).

Piaget's present position, then, severely curtails the role of school learning in fostering intellectual development. If Piaget's views of the nature of school learned concepts were valid, it would follow that such an important factor in the socialization of thought as school learning is unrelated to the development of "intrinsic structures" (Vygotsky, 1962). This is a weak spot in Piaget's position and seriously hinders practical application of his theory in education (Sullivan, 1967b). A more serious hindrance, however, is the misapplication and misunderstanding of Piaget's educational followers when they apply his "stage theory" to education. A misunderstanding of the "stage" notion enables the educational extrapolator to apply Piaget's theory to the present use of homogeneous age grouping and critical-curriculum shifts.

Regarding the justification of "homogeneous age-grouping", as I read Piaget, it would seem that he would not choose this type of setting as a desirable educational alternative in fostering cognitive development (Piaget, 1932). If learning could occur not simply by a teacher teaching students but also by peer interaction, then a case could be made for having greater stage variability within one classroom. Recall that the psychological justification for homogeneous age grouping developed under the thesis rests on the assumption that homogeneity of stage is a desirable educational alternative and that grouping by age assures greater probability that children at the same stage of development will fall within the same class. This assumption rests on a faulty and erroneous interpretation of Piaget's meaning of the term "stage", because at any given Piagetian stage the child can be at a variety of different points in his cognitive organizing. This makes it extremely difficult to postulate a "stage" as an indicator of "readiness" to learn a specific subject area when you have this décalage which Piaget describes. Thus, to postulate that it is necessary that the child have reversible operations before learning addition and subtraction in mathematics (Crawford, 1960), leaves one open to serious problems, if Piaget's horizontal décalage is present and operative. The horizontal décalage takes note of the fact that the use of reversible operations takes place at different times for different problems even within a stage of development. This is seen by the fact that the concrete operational child uses reversibility for the conservation of number first (at approximately 5 years) and for the conservation of volume much later (approximately 11 years) within this generic stage. This décalage exists because some concepts are more difficult than others and the child has more experience in some realms than others (Turiel, 1968). The fact of its presence, however, makes it exceedingly difficult for the use of generic stage notions as indicators for readiness to learn in specific subject matter areas.

More important to this question is the fact that educational extrapolation of Piaget ignores the variability of "intrinsic structures" within a given stage that Piaget and his co-workers clearly describe. A stage is never a static state and as Inhelder (1962) states each stage involves a period of formation (genesis) and a period of attainment. Thus, each structure constitutes at the same time the attainment of one stage and the starting point of the next. Piaget (1967) still holds to this interpretation when he states:

> We must, however, introduce an important distinction between two complementary aspects of the process of equilibration. This is the distinction between the variable structures that define the successive states of equilibrium and a certain constant function that assures the transition from any one state to the following one (p.4).

Clearly, when he postulates an "intrinsic structure", it is always in a dynamic equilibrium which allows advancing cognitive development.

When one considers the factors which enhance the development of more advanced "intrinsic structures", there is some evidence within the Piagetian tradition which argues against excessive homogeneous age grouping. Piaget (1932) argues in the area of moral development for the necessity of peer group interaction in fostering more abstract forms of moral judgment. Recent evidence indicates that children reject moral advice which is one stage below their own, advance their development when it is one stage above their own, and distort advice to their own level when it is two stages above their own (Turiel, 1968). This might argue that some variability in grouping is desirable for development as long as the variability is not too discrepant. Specifically, in such areas as social and moral development, it suggests that more peer group learning may be adesirable learning procedure, since the teacher cannot feasibly attune to all levels or stages within a given class. At any rate, you can make a fairly good case against homogeneous age grouping with piaget's theory.

Turning to the question of critical-curriculum shifts (e.g., nursery school, elementary school, high school), it is here that we see how Piaget's theory becomes confounded with the particular cultural practices in education. As discussed under the thesis, some of Piaget's critical stage transitions appear to occur at approximately the same time that there are shifts in our educational emphasis. This appears to give credible evidence for the necessity of having these changes occur when they do occur. The problem, however, is the confounding of Piaget's stages with the type of education that a particular culture offers. As pointed out previously, Piaget does not sufficiently assess the effects of the educational process on his stages, but it certainly is operating since the stages occur faster or slower within different cultures and are dependent on the type of schooling provided by the culture (Sullivan, 1967b). The result of this interaction leads to the familiar chicken and egg, who came first, problem. I will argue in the antithesis that it is the critical-educational curriculum shifts in our culture that lead to Piaget's stages occurring at a particular time in our culture. This argument appears to have greater cogency than the thesis for the following reason: If Piaget's stage transition ages were the same in all cultures, then it would be probably correct to say that our culture has intuitively broken up its curriculum in congruence with a good psychological stage theory. The fact of the matter is that Piaget's stages do vary across different cultures and it would not be rash to say that his "stages" are partially determined (i.e., at least when they will occur) by the educational innovations in our culture.

More important than the above proposition is the fact that Piaget's stages are incorrectly interpreted. He has dealt primarily with spontaneous concepts, but we do not know if spontaneous concept formation follows the same course as concepts directly learned in a teaching-learning situation. For example, to insist on "describer thinking" for the elementary school, and "explainer thinking" for the high school in developing a physics curriculum (Peel, 1964, see p.10) is an erroneous and premature extrapolation from Piaget's stage theory. Even the development of Piaget's spontaneous concepts lack complete transituational consistency (Stone and Ausubel, 1967; Uzgiris, 1964). Contrary to the expectations of Piagetian theory, evidence exists which indicates that formal thought in a variety of subject matters is not possible during the initial phase of this culminating stage in cognitive development. Thus, an individual may have reached the formal stage in science while not demonstrating formal thought in social studies until several years later (Stone and Ausubel, 1967). This indicates that shifts in thought processes occur at different times in different subject matter areas. There appears to be no compelling evidence from Piaget's theory that any one particular age is critical for a radical change in curriculum programming. Abstract thinking, for example, generally emerges earlier in science than social studies because children have more experience in manipulating ideas about mass, time, and space than about government, social institutions, and historical events. However, in some children, depending on their special abilities and their experience, the reverse may be true (Ausubel and Sullivan, 1970).

At the present time, developmental stage theory offers no clear cut justification for critical-curriculum shifts but several questions seem educationally relevant in terms of the relation. Relating specifically to the relationship of the change from perceptual (pre-operational) modes of functioning to more conceptual (operational) modes of thought, Gollin (1968) poses the following question: Does the shift in cognitive operations in one area generalize to other areas and how situation-specific are the shifts? Clearly, the answer to this question is a necessary prerequisite for further use of Piagetian theory in education. The second question centers on the role of education and its effect on "intrinsic structure". The fact that children begin elementary school at age 5 in our culture must be considered when examining the transition from preoperational to concrete operational thought. It could be at the same time a cause of the transition and the historical consequence of the potentiality for it at that age (White, 1965). More light on this interaction will probably lead to a more sophisticated use of stage theory in education.

Summary. The conclusion of this section gives no Hegelian synthesis to the previous dialectic but I hope that it will shed a different light on the question as originally posed. In focusing on the effects of individual differences across ages (inter-age individual differences), we advanced a stage theory model and explored how this could be used to justify particular types of educational environments and teaching strategies to deal with stage changes. As I indicated in the introduction, the discussion of the question of inter-age individual differences would partially undermine the question as originally stated. To restate it:

> When are children developmentally different enough that very different teaching behavior or training environments are necessary to promote their growth?

The question, as explored in the thesis, attempted to show how Piaget's stage theory could be used to justify certain contemporary educational practices (i.e., homogeneous age grouping and the existence of a particular nursery, elementary and secondary school). The antithesis attempted to criticize this use of Piaget's theory and advanced a variety of alternatives which do not appear inconsistent with Piaget's stage formulation. The main point made in this section was that there is nothing theoretically sacred about our present educational setup, save convention.

To briefly conclude, it would appear that no definitive answer can be given to the question, as is usually stated concerning effects of developmental stages on particular changes in teaching strategy. A child can be at one particular developmental level in physical sciences and at a different level in the social sciences. This type of décalage should prevent the teacher from looking for, and the educational psychologists from giving, simple recipes on how developmental stages fit into different types of teaching strategies and different educational environments. This is probably one of the reasons why some curriculum planners have purposely sidestepped Piaget's theory. It is interesting to note that even in the area of mathematics, where Piaget's terminology appears to directly apply, there is considerable question of his immediate relevance. Kilpatrick (1964) in commenting on the Cambridge Conference on School Mathematics, takes note of this caution:

> We made no attempt to take account of recent research in cognitive psychology. It has been argued by Piaget and others that certain ideas and degrees of abstraction cannot be learned until certain ages. We regard this question as open, partly because there are cognitive psychologists on both sides of it, and partly because the investigations of Piaget, taken at face value, do not justify any conclusion relevant to our task. The point is that Piaget is not a teacher but an observer - he has tried to find out what it is that children understand, at a given age, when they have been taught in conventional ways. The essence of our enterprise is to alter the data which have formed, so far, the basis of his research. If teaching furnishes experiences which few children now have, then in the future such observers as Piaget may observe quite different things. We therefore believe that no predictions, either positive or negative, are justified, and that the only way to find out when and how various things can be taught is to try various ways of teaching them (pp. 129-130).

We know from Piaget that, in general, children usually move from concrete to more abstract modes of thinking in various subject matter areas, which may be helpful to keep in mind when preparing programs. We also know that the child is not a tabula rasa but incorporates information into an actively organizing cognitive structure. This is certainly an advance over our previous dependence on behaviorism. But the question of when developmental variances make an important difference for educational programs and changes in teaching strategy still appears to be a practical and empirical one to be answered at the teacher's discretion. It is recognized that as training environments or teaching strategies change because of developmental age differences, it becomes increasingly difficult for one teacher to span the whole panorama of developmental differences. We will never return to the "Little Red School House" because we have become aware that individual differences across age have important consequences for effective teaching strategies. Certainly, one teacher cannot span all of these developmental differences and so we have restricted these individual differences by homogeneous age grouping. Whether it is necessary to restrict the differences by this procedure is an open question. For teachers who are unable to cope with large individual differences in their classroom it seems a likely alternative, but for the teacher who enjoys the variety it may be a restrictive bore. More will be said on the problem of variability in the concluding section of this chapter.

INTRA-AGE INDIVIDUAL DIFFERENCES

The Normal Model for Intra-Age Individual Differences

One of the salient omissions in many stage theories, including Piaget's, is the treatment of viable individual differences which exist within a particular stage of development. Piaget only considers individual differences that occur between stages, and thus across ages, and has given relatively minor consideration to individual differences within a given stage or age level (Kessen, 1962). The importance of within-age contemporaneous individual differences for educational strategies is clearly evident in the second major question to which this chapter is addressing itself. For review purposes, the question will be restated:

> Holding age constant and barring extreme physical disability (e.g., blindness, deafness or severe brain damage) are children of any given age

> level so different from each other that we cannot imagine the same person teaching all of them or at least doing the same kind of teaching within the same domain to all of them?

More succinctly, the question is asking what role the intra-age individual differences play in the planning of differential teaching strategies. An attempt at answering this question will not suffer from a poverty of data on the side of individual differences. The fact of the matter is that there is so much data that it is difficult to know just what types of individual differences should count in planning differential teaching strategies. These types of differences are broadly defined as aptitudes which pragmatically include whatever promotes the pupil's survival in a particular educational environment, and it may have as much to do with styles of thought and personality variables as with abilities covered in conventional tests (Cronbach, 1967). Sex differences can also be included under this definition.

But what types of differential abilities should make a difference in our educational programming? Should we concentrate on patterns of intellectual aptitudes as exemplified in the ethnic data recently reported on by Lesser and associates (Lesser, Fifer, and Clark, 1965; Stodalsky and Lesser, 1967), or is it more important to stress the differences in information-processing abilities (Harvey, Hunt and Schroder, 1961; Hunt, 1966a; Schroder, Driver and Streufert, 1967)? The recent studies on cognitive style (Kagan, 1966) and creativity (Wallach and Kogan, 1965) further complicate the problem of when and where to start differential teaching strategies.* Psychologists are by no means in common agreement as to which types of individual differences should take precedence in the educational process. Jensen (1967) maintains that the most important differences for educational purposes are intrinsic individual differences (i.e., individual differences directly related to the learning and exemplified in such tasks as memory, transfer, etc.), whereas extrinsic individual differences should play a relatively minor role (i.e., differences in personality traits and attitudes, etc.). This position contrasts with Hunt's (1966a), where the stress is clearly on extrinsic individual differences. In the latter, we see the emphasis placed on individual differences in information-processing skills which are related to certain types of personality dimensions.

Most of the studies that have taken intra-age individual difa

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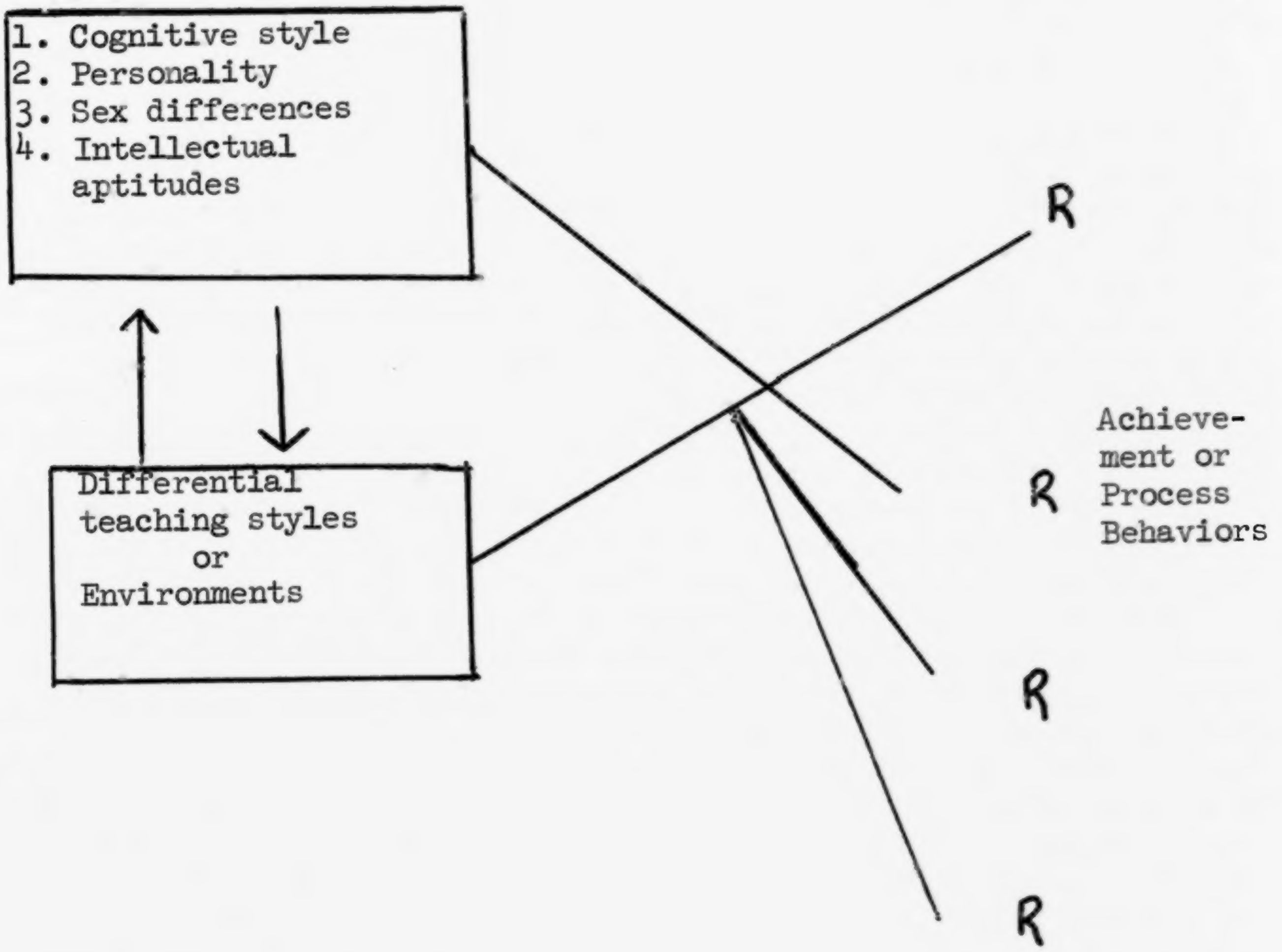
*Recent reviews and interpretations of the effect of individual differences in the school may be found in Gagné (1967), Sears and Hilgard (1964), Thelen (1967) and Wallach and Kogan (1965).


1. Cognitive style
2. Personality
3. Sex differences
4. Intellectual aptitudes
Differential teaching styles or Environments
R
Achievement or Process Behaviors
R
R
R

b

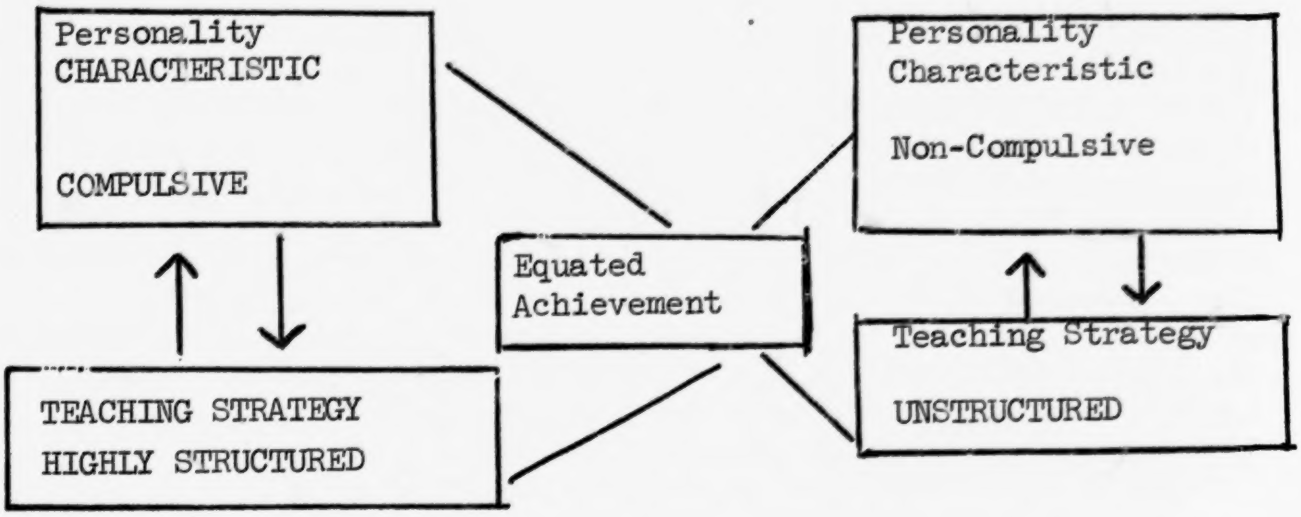

Personality CHARACTERISTIC
COMPULSIVE
TEACHING STRATEGY HIGHLY STRUCTURED
Equated Achievement
Personality Characteristic
Non-Compulsive
Teaching Strategy
UNSTRUCTURED

Figure 3a. General teaching model for dealing with intra-age individual differences.

Figure 3b. Specific application of the model taken from a study reported by Grimes and Allinsmith (1961).

ferences into account in providing differential teaching strategies have usually centered on one or two major dimensions of individual differences. The general interaction model for contemporaneous differences is similar to the one discussed under interage differences and is illustrated in Figure 3a. A concrete example of the model can be seen in a study which was designed to test the hypothesis that there would be an interaction between teaching methods and pupils' personality characteristics in the determination of school achievement (Grimes and Allinsmith, 1961). They conjectured that elementary school children who were highly compulsive would respond to structured methods of teaching, such as teaching reading by phonics. In line with this hypothesis, they found differences by the third grade in favor of phonics over word recognition for this type of children's population. Holding teaching methods constant, the following differences are correlated with the personality characteristics: (1) compulsive children do better than less compulsive children under structural conditions and (2) compulsive children are neither favored nor disfavored when teaching is unstructured.* Figure 3b is an illustration of the hypothesis in its ideal form, but as usual, the results do not conform completely to the ideal.

Although there is nothing inherently wrong with this study or studies like it, they nevertheless defeat their purpose to some extent in their attempts to deal with individual differences. This is so because most studies of this type take very few dimensions of individual differences into account. This is understandable when the investigator is confronted with the plethora of individual difference dimensions that can be found in the psychological literature. It is possible that in considering only a small proportion of all the possible differences due to individual variation you would end up by projecting an infinite variety of teaching atmospheres or styles.

The Thought Experiment

In order to demonstrate the shortcomings of the model as presently stated and to illustrate its weaknesses, I propose a thought experiment which, in the scientific enterprise, is an attempt to derive new knowledge in an area where confusion exists (Kuhn, 1966). The thought experiment is designed to disclose a misfit between traditional conceptual apparatus and nature. This is an imagined situation which allows the scientist to employ his usual concepts in the ways that he has employed them before. The experiment must not at the outset strain normal usage (Kuhn, 1964). However, it is presumed that the thought experiment will be directed to point out the logical contradictions and confusions which the normal model produces. Thus, any situation capable of displaying such contradictions will suffice. Assuming that the nature and conceptual apparatus are jointly implicated in the contradiction posed by the thought experiment, it is expected that the experiment will demonstrate the need for an improved model. It is not necessary that the imagined situation be potentially realizable in nature; the conflict deduced from it must be one that nature itself can present (Kuhn, 1964).

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*Only a small portion of the results and design of this study are reported here.

The present imagined thought experiment proceeds on the erroneous assumption that there are only two major dimensions of contemporaneous individual differences that are educationally relevant. It is hoped that by combining these two major dimensions using our present interaction model, we will be able to demonstrate the shortcomings of the normal model and simultaneously show the need for a change or revision of the present model. The experiment will use as illustrations two sets of data which explore the implication of differential teaching strategies stemming from the presence of demonstrated contemporaneous individual differences. The two studies which will be briefly described, and only in part, are Hunt's (1966a) study on conceptual systems and Lesser, Fifer and Clark's (1965) study on individual differences in patterns of intellectual abilities. Certainly other studies could have been used as illustrations for our experiment, but the above were chosen because of the clarity of their findings and their apparent validity as important educational findings.

Hunt's Conceptual Systems. The use of Hunt's (1966a) conceptual systems orientation for educational purposes is derived from a stage developmental theory propounded by Harvey, Hunt and Schroder (1961)*. The "conceptual systems" viewpoint assumes that the normal course of development under optimal conditions leads to more flexible orientations toward the environment and the interpersonal world. This development is characterized in terms of successive developmental stages and by the specification of environmental effects in relation to specific developmental stages. Flexibility of orientation (i.e., degree of abstractness) or its absence in the adult is seen as the result of earlier structural progression and articulation or arrestment. We will focus on contemporaneous individual differences which are apparently due to arrestment at a particular stage, but it is first necessary to give a brief overview of the theory and some of its stage descriptions.

The basic unit of the theory is the construct "conceptual systems" which is defined as "a schema that provides the basis by which the individual relates to the environmental events he experiences" (Harvey, Hunt and Schroder, 1961, pp. 244-245). Like Piaget's schemas, the system is a construct for representing the mediational processes within the organism for adapting to the environment. It is similar to a computer program, in that it serves to filter and code or "read" events (Hunt, 1966a).

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* Our experiment will focus on contemporaneous individual differences based on this theory. Thus, we will ignore for now the inter-age implications of the theory.

> From the Conceptual Systems view, development is seen as a continuous process which, under optimal conditions, proceeds in a given order to a higher conceptual level (CL). Higher CL is associated with increased interpersonal maturity and increased conceptual complexity, and thus is a desirable state. Under optimal conditions, progression on the CL dimensions is viewed in terms of successive stages, each characterized by a specific interpersonal orientation and conceptual structure. If the environmental conditions are not optimal, then the person remains at a lower CL, and may become closed to further progression (Hunt and Dopyera, 1966, p. 48).

The first three stages and a brief description of their characteristics are given in Table 1. The application of the interaction model matching types of environments with particular personality characteristics is seen in Table 2.

Applying the "conceptual systems" strategy in grouping a population of lower-class Negro students in a junior high school, the following findings were reported:

> We have obtained evidence for the differential effectiveness of educational environments according to the student's conceptual level. With the present population of lower-class students, classroom groups were formed homogeneous in conceptual level - a Sub 1-group, a Stage 1 group, and a Stage II group. In an exploratory study with ninth-grade students, the teachers were unaware of the nature of the groupings, but they quickly discovered that the groups were differen-

TABLE I

Developmental Stages in Interpersonal Orientations
(as adapted from Hunt, 1966a).

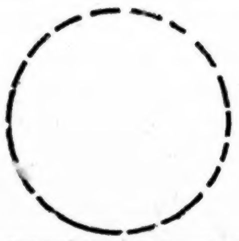
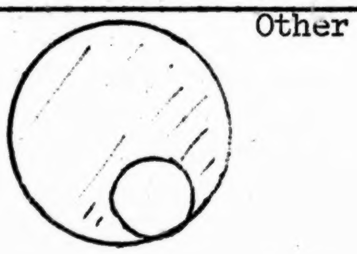
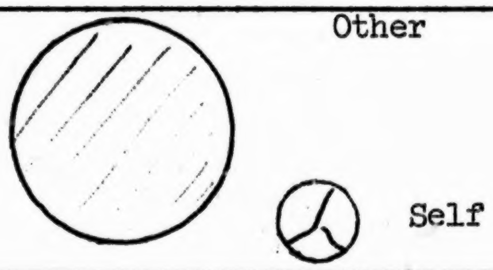
Stage	Self-Other Orientation	Stage Characteristics
Sub I		Self-centered, unorganized phase before incorporation of cultural standards.
I		Learning the "ground rules" or cultural standards which apply to everyone.
II		Learning about oneself and how one is distinct from these generalized standards.

TABLE II

Expected Outcomes of Stage-Environment Combinations (Hunt, 1966a).

Present Stage	Environment	Match/ Mismatch	Expected Outcome
	Clearly organized within normative structure.	Optimal	Open I
Sub 1	Normatively unclear or inconsistent	Sub-optimal	Closed Sub I
	Emphasis on autonomy	Super-optimal	Closed Sub I
	Emphasis on autonomy within normative structure	Optimal	Transition to II
Open I	Clearly organized within normative structures	Sub-optimal	Closed I
	Highly autonomous	Super-optimal	Transitional arrestation
	Highly autonomous with low normative pressure	Optimal	Open II
Stage II	Clearly organized within normative atructure	Sub-optimal	Closed II
	Emphasis on mutuality	Super-optimal	Closed II

> tially receptive to specific educational procedures. The Sub 1 group required considerable structure and concrete experiences, and could not maintain a discussion. The Stage 1 group functioned most effectively when competition and debates were involved. The Stage II group seemed to function most effectively when there was considerable opportunity for independent exploration, questioning and differences of opinion (Hunt and Dopyera, 1966, p.52).

The findings are most interesting from an educational viewpoint and warrant further discussion, but for purposes of the thought experiment let us proceed to the next set of findings.

Lesser, Fifer and Clark's Study on Mental Abilities. The purpose of this study was to examine the pattern of four mental abilities (i.e., verbal, reasoning, numerical and spacial abilities) among first-grade children of four ethnic groups in which each group was further divided according to social class. The particular ethnic groups were drawn from a New York City population consisting of equal portions of Chinese, Jews, Negroes and Puerto Ricans. Each ethnic group was further divided according to middle-class or lower-class status. The most important finding is that ethnic background or social class has different effects. Ethnic background appears to affect the pattern of mental abilities, while social class leaves the patterns unaltered, affecting only the absolute magnitude of the specific ethnic patterns. The findings are briefly summarized as follows:

1. Verbal Ability - Jewish children rank first, being significantly better than all other groups, Negroes second and Chinese third (both significantly better than Puerto Ricans) and Puerto Ricans fourth.
2. Spatial Ability - By contrast, the rank order proceeds from Chinese to Jewish, Puerto Rican and then Negro children.
3. Reasoning Ability - The rank order proceeds from Chinese to Jewish, Negroes and then Puerto Rican children.

4. Number ability - The rank order proceeds from Jewish to Chinese, Puerto Rican and then to Negro children.

The patterns are clearly seen in Figure 4. Also, when all four ethnic groups are combined, the middle-class was significantly superior to lower-class children. The most interesting results can be seen in Figures 5a and 5b.

Ethnicity patterns among mental abilities maintain themselves even over Social class differences for all four groups. The figures illustrate this pattern for the Chinese and Negro groups. One amazing finding is an almost exact replication of this study in a Boston population (Stodolsky and Lesser, 1967). The importance of these findings for the study of individual differences stems from:

> The failure of social-class conditions to transcend patterns of mental ability associated with ethnic influences was unexpected...
> The greater salience of social class over ethnic membership is reversed in the present findings. Ethnicity has the primary effect upon the organization of mental abilities, and the organization is not modified further by social-class influences (Stodolsky and Lesser, 1967, p.570).

The above authors go on to discuss the educational implications of their study by asking the following questions: How can knowledge of a child's pattern of mental abilities be fitted to the content and timing of his instruction? How can instruction be adjusted to the child's particular strengths and weaknesses, or the child's abilities modified to meet the demands of instruction?

To briefly show how the authors attempt to tackle these educational questions, which incidentally clearly fit our mode (see Figure 1), we quote them again:

> Answering these questions requires continuous, successive approximations to an analysis of the child's special combination of intellectual resources and the demands for intellectual resources placed upon him by the curriculum. We have begun two preliminary studies, one in the teaching of begin-

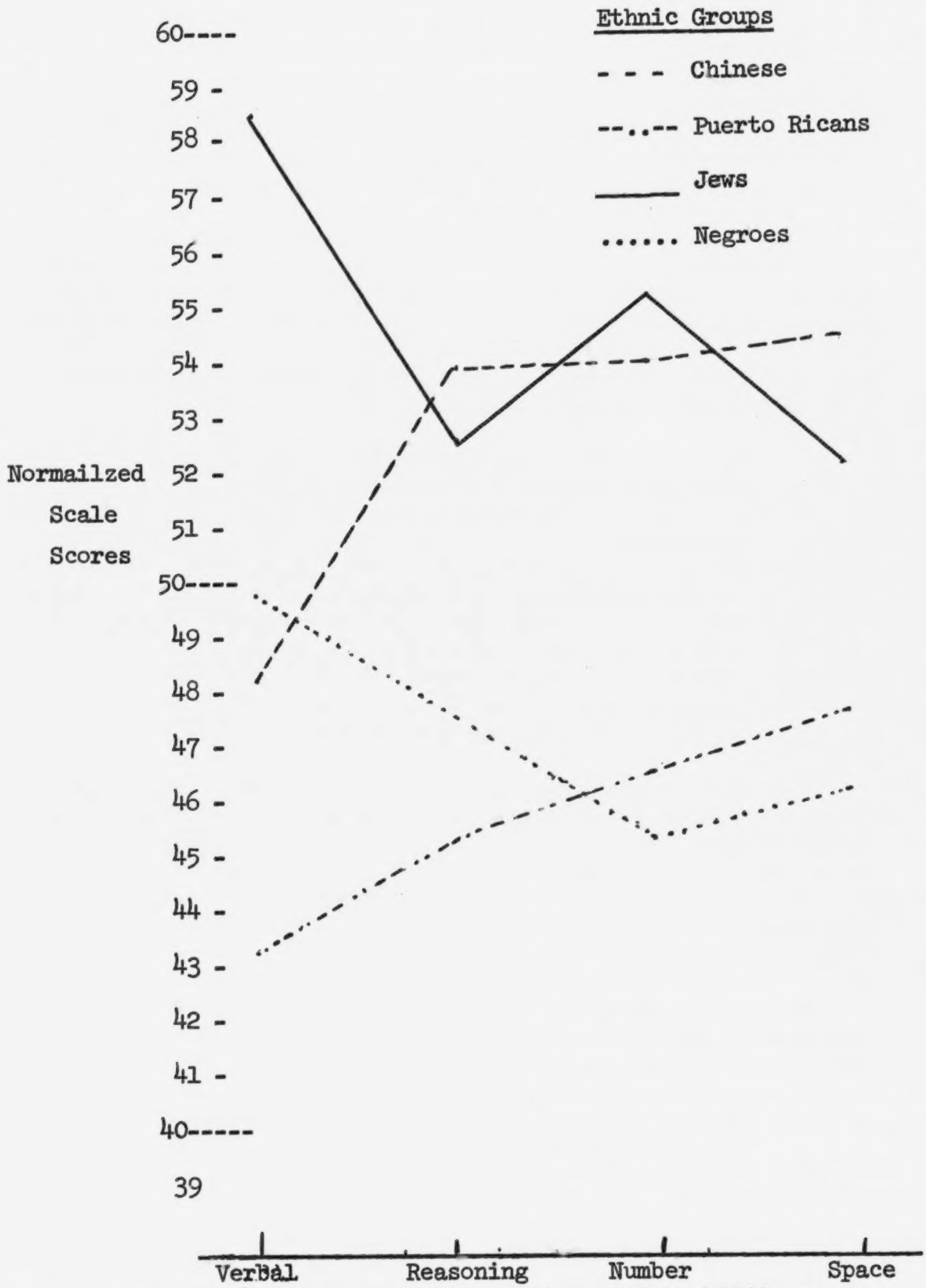


Figure 4. Pattern of normalized mental-ability scores for each ethnic group. (From Lesser, Fifer and Clark, 1965).

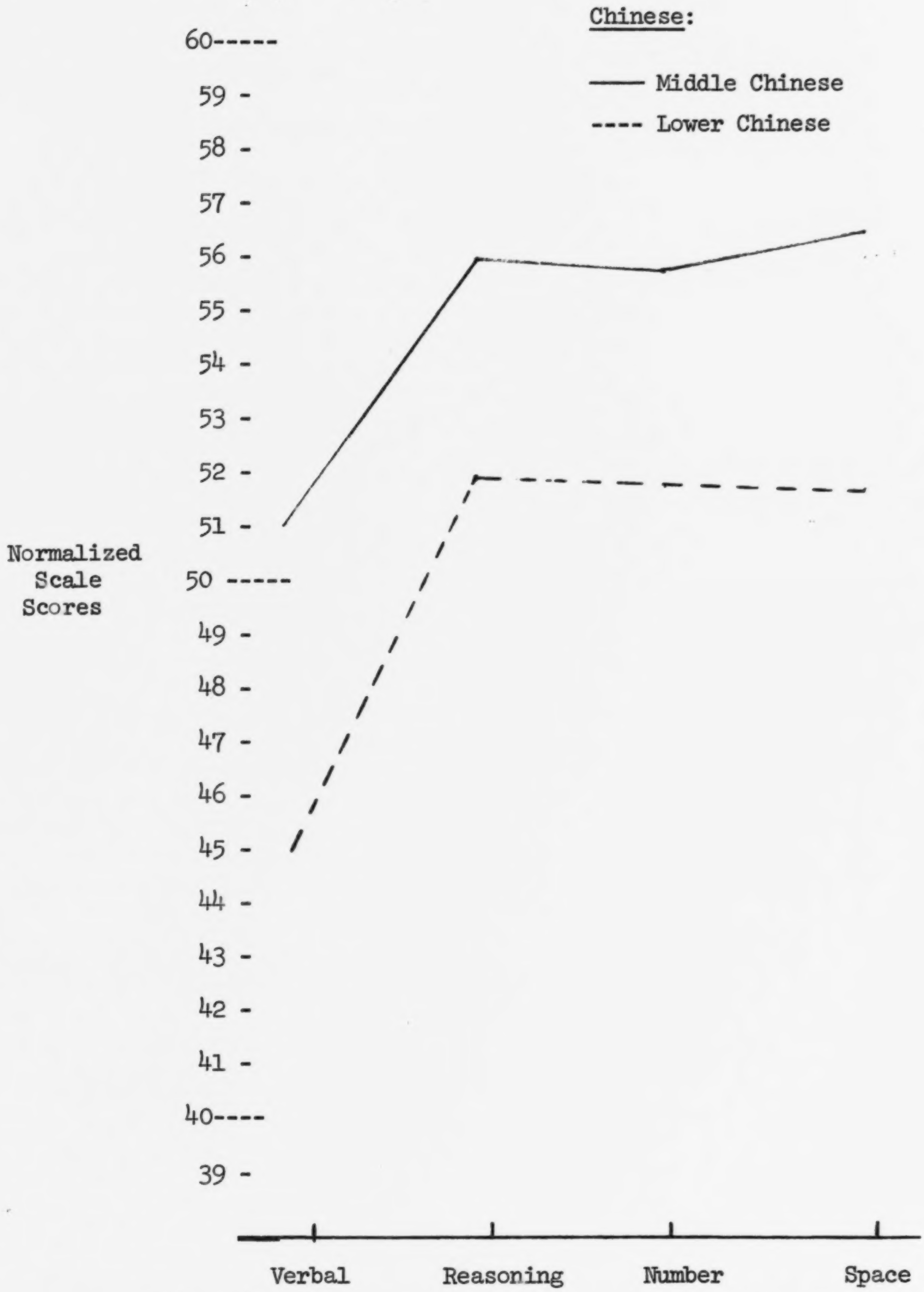


Figure 5a. Patterns of normalized mental-ability scores for middle-and lower class Chinese children. (From Lesser, Fifer and Clark, 1965).

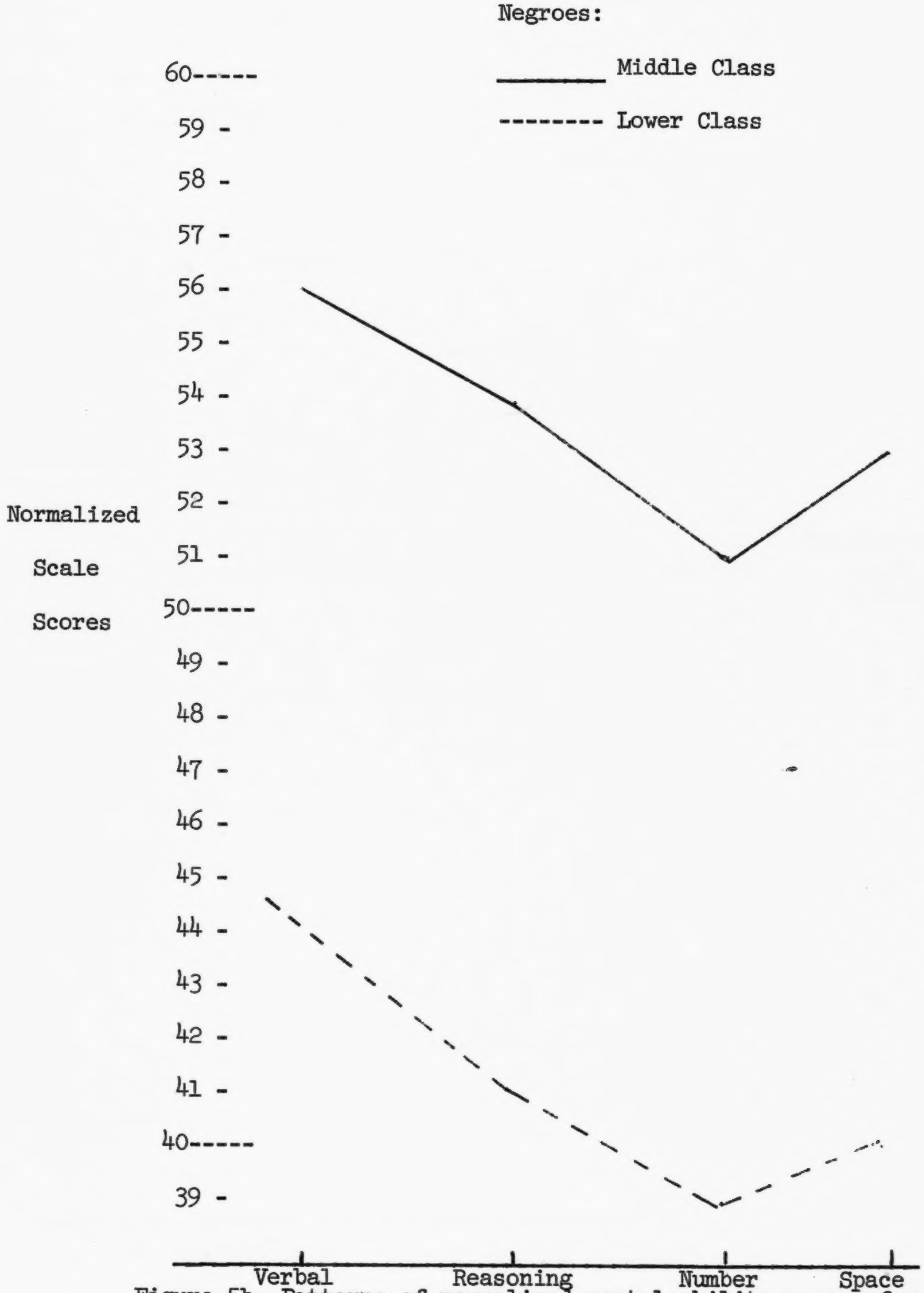


Figure 5b Patterns of normalized mental-ability scores for middle-and lower class Negro children. (From Lesser, Fifer and Clark, 1965).

> ning reading, another in learning the concept of mathematical functions at the sixth grade level. One approach we have used, begins with an assessment of the child's particular pattern of mental ability and seeks to build an instructional strategy to capitalize on the child's intellectual strengths and minimize his weaknesses. For example, in teaching mathematical functions to children strong in Space Conceptualization, but weak in Numerical facility, we use graphical presentation; in teaching the same concept to a child strong in Numerical facility but weak in Space Conceptualization, we rely on manipulation of numbers in a tabular form (Stodolsky and Lesser, 1967, p. 580-581).

The authors discuss problems of mismatching but this is not important for our experiment, since we are not making a critique of this approach but simply using it for illustrative purposes.

The Experiment Proper. The imagined experiment proceeded on the assumption, patently erroneous, that the preceding studies were the only viable contemporaneous individual differences with educational import. Ignoring the age differences in the studies as quoted, the type of experiment I propose is to link these two sets of data together and attempt to project programs which honor the individual differences found within them both. In effect, we are combining the extrinsic individual differences as exemplified in Hunt's theory with the extrinsic individual differences dealt with in the work of Lesser and Associates. Remember that ethnic differences override social class, so let us simply concentrate here on a group of lower-class children. Let us divide children in the lower-class into ethnic groups and assume there are only four ethnic groups existing in the world (i.e., Chinese, Negroes, Puerto Ricans and Jews). If we attempt to provide differential teaching environments or strategies taking into consideration only three of the conceptual systems stages as well as ethnic patterns of abilities of the children, we could project in the ideal state at least nine types of teaching strategies (see Figure 6).

It is evident by limiting oneself to a particular social class with differential conceptual functioning, and

ETHNIC PATTERNS

Hunt's Conceptual Stages

Negro Pattern	Puerto Rican Pattern	Jewish Pattern	Chinese Pattern
1) Sub 1	4) Sub 1	7) Sub 1	10) Sub 1
2) Stage 1	5) Stage 1	8) Stage 1	11) Stage 1
3) Stage II	6) Stage II	9) Stage II	12) Stage II

Figure 6. An Ideal Projection of Differential Teaching Strategies for Children at Three Different Conceptual Levels.

assuming that there are only four relevant ethnic groups with patterns of abilities centering around four major factors, that the problem of planning for individual student differences by projecting differential teaching strategies presents a rather formidable task using the normal model. The problem would become more complicated if we added only a small number of the contemporaneous individual differences for consideration. Cognitive styles, modes of creativity, personality characteristics and intrinsic individual task differences could well lead to an infinite variety of teaching strategies or atmospheres. Reflecting on our original question, it is probably possible to demonstrate that a vast portion of the individual differences reported will show differential educational results as a result of differential teaching strategies. It is very easy to arm-chair the dictum that we should plan differential teaching strategies for individual student characteristics. The problem for the teacher and curriculum planner is in choosing from the vast array of individual differences those characteristics which are educationally relevant. The complexity of the enterprise, no doubt, discourages many from even attacking the task in practical educational settings and as a result it is largely left in the realm of theory for educational psychologists. Thus:

> Individual differences are given much lip service and even more drawer space in the form of filed test results, yet educational planners and decision makers continue to work from models for "students-in-general". Teachers may know quite a lot about how students differ in educationally relevant ways, yet they continue to use a "lockstep" curriculum plan (Hunt, 1968, p. 1).

No one will deny that many teachers and educational planners are prone to take the easier and less complicated educational route of ignoring individual variation and directing their focus to the middle of the class, while providing special remedies for the extremes. Nevertheless, one must be sympathetic to the fact that the presence and knowledge of a large variety of individual differences in a classroom gives no intrinsic indication as to where to start with differential strategies or which types of individual differences should be focused upon. In all honesty, the recent edited review of individual differences in learning is of little help in answering these practical educational questions (Gagné, 1967). The platitudes made by many educational psychologists illustrate more their scientific bias rather than their educational depth. For example, the following quote is taken from a well known educational psychology textbook:

> The writer looks forward to the day when the teacher will begin the school year by spending perhaps two days collecting data systematically about the pupils, feeding the data into an electronic computer, and receiving back from the computer conclusions about possible sources of difficulty children may encounter in learning. It can be anticipated that these two days of systematic inquiry, together with the one electronic computer will perform on the data, will provide a much more thorough understanding of the individual child than the teacher can at present during a full year of work with the same children . . .
> What is being pointed out is that there is no substitute for the systematic, careful collection of data and processing and the processing of that data by up-to-date methods (Travers, 1963, p. 33).

The fact is, however, that we have plenty of data already and this mania for collecting reflects the empiricist bias of many educational psychologists. The assumption that this data will somehow become integrated in the absence of theory is aptly called, by one of my colleagues, super-optimism (Olson, 1967). Commenting on this fad for data collection, Miller (1962) notes:

> A great scientist, Lord Kelvin, once said, 'When you cannot measure . . . your knowledge is of a meager and unsatisfactory kind'. He was, of course, a physicist . . . It is a bit ironic that Kelvin's proclamation is better known amongst social scientists than natural scientists. Social science has always been a little defensive about its status, a little sensitive about its claim to be scientific. So, when a great physicist announces that measurement is to keep to scientific knowledge, he is apt to receive more attention than he deserves. In truth, a good case can be made that if knowledge is meager and unsatisfactory, the last thing in the world you should do is to make measurements. The chance is negligible that you will measure the right things accidentally. Nevertheless, many social and behavioral scientists, assured that measurement is the touchstone of scientific respectability, have rushed out to seek numbers before they knew what the numbers would mean (p. 79).

It would seem that this is one of the problems that the teacher and the curriculum planner is faced with when he is confronted with the infinite variety of data on individual differences which the psychologists present to him. In most cases, the data is rarely couched within an adequate theoretical framework for him to make the bridge between the data on individual differences and practical classroom strategies. It may well be that we will need the use of a computer to cut down the data to sizeable proportions. At present, this computer strategy is only at the talking stage, as seen in Cronbach's (1967) suggested strategy:

> It seems likely to me that even with this sort of multivariate testing a computer can provide, we will have to build up adaptations slowly, on the basis of only a few differential variables. While in principle a unique instructional diet could be matched to the students' idiosyncratic intellectual metabolism, nothing is to be gained by introducing unvalidated modifications. And it will be a long time before we have adequately validated rules of adaptation that take into account even a half-dozen differential variables. As I see it, our greatest hope for fitting the school to the individual lies in the development of theory that finally marries the differential and experimental approaches to learning (p. 37).

If we wait for psychologists to develop the theory and have their matching procedures validated, we will probably start our work on individual differences in heaven (or hell). Moreover, prescriptions such as the one proposed in the above quote rest on the assumption that the social order is a fixed entity which does not change. If one of my assumptions as stated at the outset of this chapter comes true (i.e., the changes expected to take place in the society due to desegregation), we can expect many old individual difference configurations to dissolve and a host of new configurations to emerge. It may be that by the time we have the psychological theory and its educational validation completed, it will be geared to a set of individual differences which have become obsolete.

A more realistic approach would be to clearly set the educational task of dealing with individual differences within a clearly delineated philosophical perspective. As I stated previously, psychology is a descriptive science and education is a moral enterprise. Moral statements are not descriptive as are scientific statements, but are prescriptions which are accompanied by such words as "ought," "right," "wrong," "good," and "bad" (Hare, 1952). It is in this sense that educational objectives are stated in moral evaluative terms (e.g., in a democratic society we ought to take into consideration student individual differences in fostering their educational growth). In approaching the problem of individual differences and differential teaching strategies, it might be helpful first of all to articulate the moral necessity of even entertaining this problem. If it turns out to be a justifiable problem, which I think it will be in our society, it will pose several other relevant questions which will help to eliminate some of the confusions precipitated by the almost infinite variety of individual differences which the educator gleans from psychological data.

For example, Stodolsky and Lesser (1967) raise very basic questions for teachers and curriculum planners who are interested in the problem of matching the curriculum to the student's individual characteristics when they ask:

> Should schools provide equal opportunities to promote the _equal_ development of all groups and individuals or equal opportunities for the _maximum_ development of each group or individual? Can the schools aim to do both? (p. 583).

Questions such as the above are not asking for _descriptive_ statements but for moral imperatives. The fact that these questions are not entertained is probably one of the reasons why many of the compensatory education programs extant proceed by attempting to deal with individual differences by eliminating them. The differential teaching strategies for the culturally deprived are designed to obliterate the individual differences that exist between social classes. While certain aspects of this strategy may be desirable, the program _in toto_ may be a contradiction for a society that preaches democratic principles. Focusing on these questions may aid us in determining which contemporaneous individual differences are relevant and commensurate with our educational objectives when planning differential teaching strategies or environments. The seemingly laudatory strategy of grouping children together who are _culturally deprived_ for maximum educational change may prove in the long run a means of proliferating the _de facto_ segregation that exists in our society. If it turns out that certain aspects of our objectives are centered on the maximum development of each group or individual's idiosyncratic individual differences, it may be that:

> Rather than adapting to or reducing individual differences, they may actually have the effect of accentuating or increasing individual differences. This could be much more than a 'sleeper' effect--one that would show up only after the passage of time. It might actually have immediate effect. Using verbal, spatial, or symbolic teaching methods might have the effect of making some children highly verbal, others highly spatial, and others highly symbolic in their thinking (Carroll, 1967, p. 43).

Certainly many other questions about educational objectives will come to mind which will be helpful in keying in on relevant individual differences for educational programming. For instance, if we are stressing achievement outcomes as our objectives, we would probably do well by focusing on Jensen's (1967) intrinsic individual differences, whereas if we are stressing information processing abilities (e.g., Hunt, 1966a; Schroder, Driver and Streufert, 1967), it may be wiser to focus on extrinsic individual differences.

Summary. The "thought experiment" was designed to point out the shortcomings of the normal interaction model for dealing with contemporaneous individual differences and procedures for differential teaching strategies or environments. It was evident that the staggering variety of contemporaneous individual differences with which the strategists are confronted presents enormous problems for planning educational programs. In attempting to answer the question of whether contemporaneous individual differences pose a serious enough problem to suggest that it would be impossible to imagine the same person teaching within this variety, or at least doing the same king of teaching within the same domain, it became apparent that there was no metaphysical necessity for differential strategies or teachers, but more so, a moral necessity. Attacking this problem, however, demands more than the present model offers with the usual recipes. It was suggested that, by focusing on our educational objectives, it may be a fruitful approach in determining which individual differences should make the difference in our differential programming.

RETROSPECT AND PROSPECT

It is very difficult to assess in retrospect whether the attack on both of the questions as originally formulated has achieved some success. It is apparent to the author that several alternative strategies could have been applied with possibly different concluding perspectives. My one justification for the strategy used is simply that it appeared to be the best way to analyze the questions.

It is very common in academic circles to build straw men and then demolish them. This was not my intent when I proceeded, in certain ways, to undermine the original questions posed about individual differences. Certainly, these are a legitimate set of first questions to ask of educational psychologists in a democratic society. My exploration of the questions with the normal interaction model was simply designed to discourage curriculum planners from taking quick psychological recipes.

In our analysis, we treated the questions of inter-age and intra-age individual differences separately and nevertheless illustrated the complexity of the problem. If we combine these questions (i.e., consider individual stage differences and individual differences within stage concomitantly) the problem becomes further compounded. This type of analysis would further add to the conclusion that the present ways of conceptualizing the problem of individual differences and differential educational programming are inadequate and in need of revision.

The general spirit of this chapter has, in some ways, given the impression that the poor formulation of this problem is by and large the fault of educational psychologists. This is difficult to ascertain, and it would not be difficult to build an alternative case which states that the psychologist rarely suffers from being confronted with the right educational questions concerning the problem of individual differences.

In theory, the question of individual differences and differential educational environments stems from a society with a professed democratic ideology in contrast to a society, such as Russia, where Marxian ideology underplays the role of individual differences. But in everyday practice, there is some evidence to indicate that democratic attitudes of teachers and prospective teachers are inadequate and distorted *vis a vis* the meaning of democracy as stated by the Bill of Rights (Weiser and Hayes, 1966). The problem is further complicated by the social structure in America which by and large gives lip service to democratic ideals while applying them in a few select places.

> We need only travel to our closest neighborhood for an illustration of the power of the social structure over educational aims, a product of three hundred years of educational progress: an American Negro ghetto school (Fowler, 1968, p. 10).

Thus, even if psychologists were able to come up with a sufficient set of conclusions about individual differences, the cost of differentiating instruction may appear too high to suit practical administrators (Carroll, 1967). But this is simply trying to couch the problem in a larger social perspective which bears a more elaborate analysis in and of itself. Let us return again, therefore, to our more limited set of questions.

As indicated in the introduction of this chapter, it is assumed that American society during the latter part of the 20th century will further undergo rapid social and technological change. If this assumption is borne out, it becomes apparent how difficult it is at present to project into the future the types of individual differences that might become educationally relevant and also the available resources in teaching strategies, content area and types of environments. An important question centering on this future projection is raised by Joyce (1967).

> What do we do, however, when we wish to create a program to prepare teachers who will not only be able to perform tasks we are able to envision, but who will be able to create future educational forms and develop unique solutions to problems we are unable even to imagine? Can we develop systems that give teachers the power to create as well as perform? (p. 12)

One possible approach to these questions is the development of skills which give the teacher practice or training in dealing with individual differences (Hunt, 1966b; Hunt and Joyce, 1967). This training involves the development of three sub-skills (Hunt, 1966b). First, it is necessary to have the teacher develop skills for discriminating individual differences. Second, the skill of discrimination must be coupled with skills for radiating different training environments for these discriminated differences. Finally, a capacity for shifting from one type of environmental radiation to another when the teaching situation demands it (Hunt, 1966b).

In a sense, this approach rests on the assumption of non-specific transfer of skills. Thus, the skills that the teacher trainee practices now may prove to be irrelevant by the time he commences teaching, but this mode of attack still remains and can be utilized again. Also, this moratorium for the practice of these skills may be the place where new strategies can be explored which are geared toward anticipated social or technological changes. McDonald (1968) emphasizes this training for change when he states:

> If you agree with me that substantial changes will be wrought in the nature of schooling by the development of technological systems, then it becomes clear that we, as psychologists interested in the training of teachers, ought to commit ourselves to the development of new teaching styles. We ought to commit ourselves to finding the ways in which human beings as teachers can influence learning. Obviously, many of us will continue to work on the correlative task, finding ways of instructing that do not require human beings except in ancillary roles, or where the human being is the designer of this system but is not a functional component in it (p. 5).

The problem of handling individual differences in classrooms, however, will not be alleviated simply by advancing technological resources. For the future, it may be a worthwhile question to examine the time in which teacher training should commence. If we really believe in modulating the teaching environment to the individual, it appears necessary to have a greater work force to deal with this student variability. It seems reasonable to commence teacher training programs much earlier than the present schedule, by having peers teach other peers. Earlier in this chapter we discussed the possible undesirable effects of homogeneous age grouping and indicated some of the advantages of having older peers present in the classroom for enhancing cognitive development (Piaget, 1932, 1951). Here, I would like to advance the notion that peer teaching may be a very effective way for handling the individual variation in a classroom. This potential source of teachers is normally ignored in educational planning.

> In our society, today, the major responsibility for helping children acquire their skills, attitudes and values necessary to function successfully as adults has been placed in the hands of parents and educators. This model of a few adults and teachers working with, and being responsible for, such a complex learning program presents serious difficulties. There are limits to the amount of individualized attention that the learner can receive when the major weight of all learning transactions is placed on the relationship between adults and a large group of youngsters.

> We may not be making the best use of the powerful potential educational resource represented by cross-age relationships among children. It is an observed fact that children, with proper training and support from adults, are able to function effectively in the roles of helpers, and teachers of younger children - and that the older children find this type of experience meaningful, productive, and a source of valuable learning themselves (Lippitt and Lohman, 1965, p. 113).

A similar advantage of peer learning and teaching can be found in the adolescent years. As Elder (1967) points out, the lack of interest in the potential resource of teachers stems from our history of age-graded education. This history has contributed to an incapacity on the part of educators to envision the potential educational values of adult-youth relationships in the classroom. Segregation by age, for most American high schools, sharply reduces such learning experiences, maintains negative stereotypes of age-groups, and appears to contribute to the discontinuity between adolescents and adults. Peer learning and teaching does not necessitate the image of a highly permissive classroom with highly unstructured interactions. Certainly, the above type atmosphere, especially with certain types of groups, has deleterious effect on the child's cognitive development (Kohlberg, 1968). If clearly defined situations are prepared, in which peers are set in a teaching role (e.g., older with younger peers), this alleviates the problem of interaction with peers simply as a play situation.

These speculative suggestions are attempts to further explore and possibly improve the normal model for dealing with individual differences in an educational context. There seemed to be no reason to dwell on the success of the model since I agree with Kazantzkis, who in his Report to Greco, said "Return where you have failed, leave where you have succeeded." It is very difficult to spell out the importance of these suggestions, since we know that the future holds new technologies and new sources of individual differences. "We see all these things, but through a glass darkly" (St. Paul).

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Part IV

Implementation and Evaluation

Brief descriptions are given
of possible implementation and evaluation
procedures

Chapter Fourteen

Implementing the Program

The program has been designed to illustrate a way of thinking that can be used to create teacher education programs. No one should attempt to implement the program that has been described except after redesigning it completely to fit the conceptions and competencies of the local faculty.

The components as described require no really complicated support systems if we except the Inquiry School. Tape and video tape recorders need to be available with technicians to teach the candidates how to operate them. Many small rooms should be available for small-group practice teaching. The simulated school, the "teaching game," and the communication tasks are available (to copy) from Teachers College. The system for analyzing "coping" behavior is available from Dr. Ruth Formanek of Hofstra University, Hempstead, L.I. The verbal descriptions of teaching strategies are included with the present document. (Demonstration tapes will have to be made locally.) Nearly all remaining essential material is published. Specialists in each teaching field will have to prepare collections of instructional material and make demonstration video tapes illustrating the major strategies of the field.

Faculty training, in such a program, could probably only be accomplished by phasing the components in with small numbers of teacher-candidates, with faculty "taking" the program along with the students. With the exception of the *Innovator* component, the components and sub-components can all be tested separately, in some form, but the sub-components of *Interactive Teaching* depend on each other from about the middle stages on.

A good way to begin implementation and faculty-training is to start with the development of the *School as a Center of Inquiry*, designing its program and phasing it in with small numbers of children. The components of the teacher education program can be started as in-service training for the faculty of the school, with teacher education faculty "taking" the training along with the school faculty and teaching with them in the school. Then, when the school is going well and the faculty is trained, the teacher education program can be phased in.

This approach to teacher education can be adapted to undergraduate or graduate programs. Adaptation and integration with other aspects of the candidate's education is a local matter. If the program were implemented as written, it would probably be best to place it as late as possible in any four or five year undergraduate program, and to keep the components parallel so that they can be integrated naturally through the contact laboratory.

Some of the people who read early versions of this document have declared that the program can be implemented with reasonable effort *if* the School as a Center of Inquiry is *not* included. About the only aspect of the program which the "principal investigator" feels really dogmatic about is that it would be a terrible thing were anyone to develop the program without the school. The reason for this dogmatism is very simple. *We have no right to send young teachers to innovate and study education unless we demonstrate to them and to ourselves that we can build a school where those activities are the norm.* They need a clear example of such a school and if we are unable or unwilling to give it to them, it can be questioned whether we have the requisite knowledge and skill or the determination to back them up. The school is living proof of our purpose and skill.

Except for the school, all aspects of the program described herein have been tried out at least in a primitive form. Some aspects, as the *Interactive Teaching Component*, have been tried out in forms similar to the ones described. Even a version of the *Innovator* component was employed when the principal investigator was director of elementary teacher education program at the University of Chicago. Also, during this last summer, Clark Brown and Kati O'Donnell of the Teachers College faculty helped the candidates in the pre-service teacher education program to present a candidate-run school to the children of the Teachers College neighborhood. A version of the simulated school has been used at Teachers College. Flexibility training has been through several editions. The *Models of Teaching* has been reincarnated for a number of years.

The cumulative experience with the program elements suggests two guidelines for implementation. First, intensive faculty training is essential. The recommended strategy - that faculty should undergo the program before teaching in it, or while teaching in it, is based on observation of faculty members trying to implement elements of the program which have been described. Second, faculty and students must create their own program. We close with the hope that what has been done here and in the other project centers will help a few people "do their own thing" more effectively.

Evaluation Suggestions

In this section two papers suggest evaluation procedures. The first, by Dr. Thelma Baldwin of the Center for Research in Social Relations at Johns Hopkins University, discusses the general evaluation problems and recommends procedures for evaluating two components.

Her paper describes, with no mincing of words, the problems of evaluating complex training programs when many mingled procedures may affect many types of outcome.

The second paper, by Bruce Joyce and Richard Hodges, provides a specific example of the use of data banks to provide continuous and cumulative descriptive information about teacher candidates.

Evaluation

A Recommendation prepared by Dr. Thelma Baldwin,
Research Associate, Center for the Study of Social
Relations, Johns Hopkins University.

The evaluation of a developing instructional program is difficult. An adequate evaluation requires that careful observations be made of antecedent conditions, and of the training process, as well as of outcomes. Moreover, the evaluation should also provide explanations which account for these observations, and then judgments which lead to recommendations for change; i.e., improvement of the program.

The field of education has recently focused anew on the difficulties of adequate evaluation. Observation and description are impaired by measurement problems. Explanation is hindered by problems inherent in the design of experiments. Even if objectives and values are clearly defined, the judgment process is complicated by the uncertainty arising from poor observation and explanation. Despite the problems, however, an evaluation program based on the best feasible methods is necessary for the rational re-development of a training program. Thus, an evaluation scheme is proposed which suggests ways for observing, explaining, and judging the components of the teacher training program, but the reader is cautioned to be aware of the inherent problems, and to realize that evaluation methods, like other aspects of the program, must be evaluated and improved as the program develops.

There are a few general comments which apply to the entire evaluation program and then some specific suggestions for assessment procedures and relationships warranting careful investigation.

Description

Many decisions must be made concerning the description of the antecedent conditions, the training process and outcomes. Suggestions concerning what factors to observe and how to go about assessing them are given here but experience gained in conducting the program will certainly affect the what and how of observation.

In addition to these considerations, the accessibility of the collected information is important. Both individual and group data are needed. Distributions of individual scores are needed so that students can compare their mastery of a particular skill to that of all other students who have undergone the same measurement procedure. (Supervisors or instructors who are measured in some way should also be able to compare their scores to a distribution of others' scores.) Group data are necessary for many of the analyses which are used to evaluate the training procedure. Since students are trained in small groups which work closely together--giving each other feedback, support, stimulation, etc.,--the whole population of students would be expected to consist of small clusters of very similarly-trained students. These clusters or groups then are the logical units of analysis for most comparisons. Besides being the defensible unit of analysis, groups provide descriptive possibilities often overlooked in analysis of educational outcomes. A group mean is more reliable than an individual's score. Also, the variance of groups or the inter-correlation of variables within groups are useful descriptive statistics. These descriptions can be used to explore questions such as: "Why is there more variability in students' performance under one treatment than under another?" or, "Why are two variables (e. g., amount of feedback and ability to execute a teaching maneuver) more highly related in some groups than in others?"

Explanation

At a general level explanation consists of accounting for variation in the outcomes of training in terms of variations in the antecedent conditions and the instructional process. In other words, it consists of correlating antecedent and process variables with outcomes.

One of the problems in explaining the effects of this complex training program is that the number of possible explanatory factors (antecedent and process variables) is extremely large and thus many of these factors are confounded in producing the observed effects of the program. The experimental problems in unraveling these relationships into predictable cause effect statements are prohibitive. As a compromise solution, a combined program is proposed--a program of tentative, plausible explanation based on post-hoc analyses of observed effects combined with a program of carefully designed research which investigates a few of those explanation which have special practical or theoretical significance.

Judgment

The description and explanation of the outcomes of training must ultimately result in recommendations for improving the quality and efficiency of the program. The rationale and stated objectives guide this judgment process. Generally, variables should be sought which are related to the efficient attainment of the stated objectives.

The rationale of each training component describes what treatment variables are expected to be related to the objectives. Much of the data collected simply assesses these treatment variables, i. e., describes whether the program consists of what it purports to. Thus many recommendations coming from the evaluation are suggestions for making a more potent treatment.

The accompanying research tests some of the assumptions within the rationales and begins to ask questions about the effects of these treatments and their empirical relationship to the objectives.

However, it is apparent that much of the judgment concerning the relevance of the training procedures to the outcomes and the "worth" of the outcomes must rely on inferential, logical rationales and the values of the field at large.

In the remaining pages, illustrative evaluation schemes are suggested for two of the sub-components of the Interactive Teaching component: Models of Teaching and Flexibility Training.

PART II

MODELS OF TEACHING

Rationale

This sub-component of the teacher training program is based on the assumption that the ability to analyze instructional procedures in terms of theoretical models of behavior modification and the ability to initiate various sequences of activities prescribed by these models, result in increased control over learning outcomes.

A sequence of tasks has been designed to prepare students for implementing seven different models in their teaching:

1) Acquisition of a general understanding of the theoretical models of behavior modification and their use as models for instructional process.

2) Execution of four teaching maneuvers.

3) Selection of seven specific teaching models.

4) Analysis of curriculum efforts and instructional materials in terms of the seven selected models.

5) Creation, execution and analysis of lessons in terms of the models.

6) Use of models to execute and analyze teaching in the laboratory school situation.

Objectives

The objectives of this sub-component are that students be able to:

1) Execute four teaching maneuvers: a. induce productive thinking; b. induce mastery of content and skills; c. induce self direction; and d. structure activities.

2) Use at least seven models of teaching which are theoretically related to a wide variety of learning outcomes: a. analyze curriculum efforts, instructional materials and other teachers' behavior in terms of theoretical models of behavior modification; b. use models for pedagogical communication; c. execute the models in their teaching practice, initiating activities and producing intended outcomes.

3) Through in-service education, reading theoretical literature, and observing teacher behavior, students continue to develop their repertoire of models as they continue in the teaching profession.

Evaluation

The evaluation of this subcomponent centers on the six sequential tasks which describe the desired student performance during this segment of training. Accessible and inexpensive measures of antecedent and training variables, as well as methods of assessing task mastery, are suggested for each of the six tasks.

1. Understanding the theoretical ideas of models and their relationship to strategic teaching for intended outcomes.

a. Antecedent conditions
- Students' initial, personal theory concerning how behavior is modified (Elicit written statement and rate its similarity to each of the models being considered.)
- Students' willingness to consider multiple conception of the learner, instruction, and desired behaviors (Instructors and Peer-Group Ratings)

b. Instructional Process
- Instructors' facility with each model.
- Records of class activities, e. g., time spent observing films and discussing actual teaching behavior, number of theoretical sources consulted by students, per cent communications dealing with models during sampled time segments, sequence in which the different, theoretical models are considered, etc.

c. Outcome
- Written achievement test requiring student to describe a general framework in which to consider teaching models, comparing and contrasting several models within this framework. For example, the student may contrast assumptions concerning the

learner, learning activities involved, physical situation requirement, subject-matter requirements, intended outcomes, additional outcomes or side effects and so forth.

2. Execution of four teaching maneuvers

a. Antecedent Conditions
- Student initial ability to carry out each of the four maneuvers.

b. Instructional Process
- Supervisor
- Number of films observed of teachers conducting each maneuver
- Number of instances student received coded analysis of her attempts to perform each maneuver

c. Outcome
- Scores describing the success of each maneuver based on coded observation of teaching behavior in the group-teaching situations. For example, using the system devised by B. Joyce (1967), a teacher who was inducing self-direction in students, should have a high frequency of I1 and I2 responses and a low frequency of 13, 14 and 15. Thus 11 + 12/13 + 14 + 15 would be one score derived from the coding system reflecting the success of the maneuver to induce self-direction.
- Ratings of appropriate student responses (coding systems for student responses are necessary for this purpose. The work of Joyce (1967) suggests the feasibility of this sort of observation.)
- General over-all ratings made by an observer (supervisor or fellow student)

Note: The inter-reliability of these three criteria is an indication of validity. The derivation of scores and the weighting of items can be changed to inter-reliability. Each maneuver should be tabulated separately.

3. Selection of seven, wide-ranging models

a. Students' mastery of task #1, general symbolic understanding of models of teaching

b. Additional exposure selected by students (what sources are consulted, what people consulted, etc.)

c. Faculty approval of students' submitted selection.

4. Analysis of curriculum efforts and instructional materials in terms of the seven selected models.

a. Antecedent Conditions
- Students' mastery of task #1
- Group mastery of task #1

b. Instruction Process
- Instructors' use of models in pedagogical communication
- Source material used for analysis
- Type of feedback following analysis

c. Outcome
- Ratings of written analysis of standard material
- Ratings by faculty and peers following group discussion
- Proportion of speech in structured interview concerned with analysis of pedagogy in terms of models

5. Creation and analysis of lesson in terms of models

a. Antecedent Conditions
- Success on task #1
- Success on task #4
- Success of group on task #4

b. Instruction Process
- Amount of feedback (number of video-tapes made and analyzed)
- Length of discussion following video-tape
- Amount of discussion conducted in terms of model

c. Outcome
- Give standard instruction task (or choice from 2) and ask teachers to develop a lesson plan
- Rate lesson plan
- Rate success of carrying out model in mini-teaching situation, coding teacher and student responses, and using observers' ratings

6. Use of models to execute and analyze teaching in the laboratory school situation

a. Antecedent Conditions
   -Success on task #4
   -Success on task #5

b. Instructional Process
   -Amount of supervised and analyzed laboratory school teaching experience

c. Outcome
   -Ratings by classroom observer

PART III

Flexibility Training

Rationale

The purpose of this training program is to increase teachers' sensitivity to cues concerning students' developmental level, conceptual style and frame of reference. Simulated communication tasks have been developed to train teachers to (1) discriminate cues from the students' behavior, (2) ask questions to elicit more relevant cues, (3) interpret, or make inferences based on these cues, and (4) act on inferences, i.e., take learner characteristics into account to better accomplish the teaching task. It is assumed that working on these four aspects of sensitivity training in a laboratory setting will enhance the teacher's ability to observe, interpret, and act on information indirectly provided by the students behavior in the classroom setting.

Sequential Behavioral Objectives

1. Develop conception of sensitive teaching.
   -From filmed examples of teachers in the communication task
      a. identify the cues in learner's behavior
      b. identify the modifications in teacher's behavior
      c. state the intervening teacher inferences
      d. state the purpose of the teacher's task

2. Adjust own teaching behavior to match conception of sensitive teaching.
   -During communication task, teacher reacts to student's cues, asks questions to elicit more information, modifies behavior to take learner's problem into account and accomplish the teaching task.

3. Analyze own teaching behavior and set goals concerning increased sensitivity
   -Throughout training and in-service, teachers seek further experience in the laboratory working on types of communication tasks where their past performance has been poor.

Evaluation

1. Develop conception of sensitive teaching

   Instructional Process
   -Observe and rate examples of sensitive and insensitive teaching in communication task and in the field. Rate awareness of cues in learner's behavior, successful modification of teacher's behavior, achievement of teacher's purpose.

Criterion Performance
- High correlation of ratings of communication task films with previously established ratings
- Successful identification of learner problems in communication task films

2. Exhibit sensitive teaching behavior

Antecedent Condition
- Success on previous task
- Individual difference measures

Instructional Process
- Practice in communication task with all types of learner problems. Feedback consists of video-tape, peer group ratings, and interaction analyses.
- Periodic rating of role players' performances and inter-rater reliability measures of peer-group ratings provide indications of the success in executing this training procedure.

Criterion Performance
- In communication task, teacher responds to cues in students' behavior, asks questions to elicit more information, modifies her behavior and carries out the objectives of the lesson.
- Following the communication task, the teacher is able to describe the learner's difficulty.

PART IV

Research

1. Previous work with the communication task and the developed rating scales (Joyce, Dirr, and Hunt) suggests that individuals might be differentially affected by this training procedure. A useful research question would be the relationship between the personality measures taken (N structure, N Authority, Attitude) and the gain in sensitivity scores over a standard period of training (Part Correlation of the final sensitivity measure with the residual of the correlation between initial sensitivity scores and personality measures). Information from this analysis may suggest ways for developing a differential procedure for sensitivity training.

Another question of interest to this component of the training program concerns the transfer of "sensitivity" from one situation to another. Do the behaviors (observing cues, eliciting more cues, forming hypotheses and modifying teaching behavior to carry out objectives) learned in one type of problem-situation carry over to affect sensitivity in other problem situations. In other words, is there a non-situation-specific set of sensitive behaviors which might transfer to subsequent teaching situations.

Since there are five different types of laboratory situations developed for this training procedure and no rationale concerning the order in which they must be encountered, it is possible to manipulate the order in which different students encounter the same type of problem and thus provide information relevant to this question of transfer.

For example, one type of learner problem can be selected as a criterion. (Replicating the experiment with another problem as criterion would double the cost, but improve the design.) One group of students can meet this problem first in the sequence of communication tasks. Another group can confront this problem after coping with a different learner problem. Finally another group can meet this problem at the end of the training sequence, after coping with the other four types of simulated problem situations. Thus, each group begins the criterion task with different amounts of prior experience with other communication tasks. (Note: random assignment of tasks to the other positions in the sequence for each individual subject and random assignment of subjects to groups, decreases the number of alternative explanations available for any observed relationship.)

Measures of performance on the sensitivity task can be derived from the previously developed rating scales and interaction analysis system (See Joyce, Dirr, and Hunt). Two aspects of performance on the criterion task can be used as indications of transfer (1) initial performance on the criterion task (2) number of trials required to reach a criterion level of performance on this type of communication task (a sensitivity rating on this type of problem at the end of a standard series of trials).

The Use, for Research in Teacher Education, of Developmental Studies of the Teaching Styles of Elementary Teacher Education Students.

Bruce R. Joyce
Manhattanville College

Richard E. Hodges
University of Chicago

AERA - 1966 Annual Meeting

As Richard Hodges' paper[1] has indicated, we developed at Chicago a set of training models for teacher education, each employing some simulation and some feedback components. The instructional flexibility training model was designed to provide the novice teacher with control over a relatively wide range of teaching behaviors by teaching him to:

1. Discriminate teaching behaviors with sets of categories representing several dimensions of teaching.
2. Apply these categories in a description of their own teaching behaviors.
3. Set goals for expansion of the natural teaching style.
4. Provide himself with feedback through analysis of his tapes and films.

We accepted flexibility as a "good thing" in teaching style and determined to see if our training model produced it.

During 1964-1965 we made our first attempts to apply the training model and to try out several devices with which we intended to evaluate it. We especially concentrated on exploring the use of a developmental study of teaching styles as an evaluative device. We became interested in determining whether we could organize a developmental study in such a way that we could see changes in what we were calling "instructional flexibility." Presently we became more interested in the process of shaping the study of teaching styles as they emerged in our neophyte teachers than we were in evaluating our training model. Also, we became aware that the developmental technique might be useful for evaluating a good many aspects of teacher education. As we watched the unfolding of the teaching patterns of our little group of students (14) we were continually surprised by what we saw -- we found ourselves seeing aspects of the development of our students that we had never seen before.

Hence, we present this paper as a discussion of the possibilities in the use of the developmental study of teaching styles. We will illustrate the paper with the Chicago data -- it shows the uses we intend for the technique. A variety of conditions, however, prevent this from being an assessment of "instructional flexibility training" and it should not be regarded as such.

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[1] Richard E. Hodges and Bruce R. Joyce. "A Theoretical Discussion of an Instructional Flexibility Training Model for Teacher Education." (AERA 1966 Annual Meeting).

The Developmental Study

The feedback component of the Chicago Teacher Education Program required each student to produce, at regular intervals, tape recordings of his interaction with children. At irregular intervals, also, sound motion pictures were made of each student's classroom teaching.

A research assistant was trained to classify the verbal behavior of the students according to the classification system developed for assessing teacher performance relevant to Conceptual Systems Theory. The research assistant was presented each week with the tapes and films and he returned to us matrices on which his analysis of the lessons had been coded. Hence, each week we were able to follow the development of our students in terms of the categories employed in our classification system.[1]

In a full-scale developmental study of teaching styles, these data would have to be supplemented by live observational data collected by trained observers. We might add that this is no mean feat. This Fall I kept a record of twenty-five visits to a pair of classrooms. On only seven of my visits were my student teachers interacting with children. Even in some cases when I had made specific arrangements beforehand, my arrival at the school coincided with an unscheduled school assembly or other deux ex scholastica that saved my subject from observation. However, live observation should augment recordings and films, which are:

1. Not at all random.
2. Biased by self-selection by the student and his cooperating teacher.
3. Affected by the medium.

However, tapes and films can be included, if they are supplemented by live observation.

Also, however, some data should be collected under specified conditions that throw a certain aspect of teaching behavior into sharp relief. Simulations enable learner response to be controlled, for example, as in the case of Hunt's Communication Task, in which everyone teaches a specified topic to a standard learner, enabling us to see variability in response to the learner and in approach to the topic.[2]

As will be seen presently, one of our measures of "instructional flexibility" requires the teacher to teach lessons built on several different models, each of which requires different teacher behaviors, so we can see how the teacher "flexes" his style at will.

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[1] Bruce R. Joyce. A Manual for Coding Teacher Communications Relevant to Conceptual Systems Theory. Chicago, 1964, unpublished.

[2] David E. Hunt. The Communication Task. Syracuse, 1965, unpublished.

Hence, three sources of data can make up a developmental study:

Tape recordings and films.
Live observations.
Teaching done in simulated or controlled
Environs or with Specific Instructions.

Week by week, as these sources are tapped, we are provided with a sequential picture of teaching behavior that reveals the results of the training program and other factors that operate on the student.

To see how this works, let us examine data we collected from the fourteen University of Chicago student teachers over three quarters of student teaching.

The Initial Teaching Style

First we will consider the students as a group. Later we will consider individuals and subgroups.

Table One shows the results of the first four lessons of the Chicago students, or fifty-six lessons in all, as classified by the conceptual systems namual, in terms of the four general categories of the manual (Sanctions, Handling Information, Developing Procedures, and Maintenance).

It can be seen in Table One that about one-seventh of their communications were rewards and punishments, about half dealt with information, and one-fourth with procedures. About one-third of the sanctions were punishments.

From Table Two it can be seen that the bulk of the sanctions were reward or punishment of attainment. Reward of search occurred only twice out of more than 3000 communications. Attention to roles or group process (S4 and S7, respectively) was more often negative than positive. (In feedback sessions, nearly all students quickly noticed that they were not rewarding search although they were trying to get children to explore. Hence many of the students set as one of their goals to learn to reward children's exploratory behavior).

In the Information category about one-third of the communications were questions, and about 14% of the category were reflective questions (0-1 and 1-2), that is, questions which, were they answered, require the child to contribute or justify an idea or hypothesis.

About 15% of the "procedural" communications were reflective, that is, required of a child a contribution of ideas or opinion.

TABLE ONE

Initial Teaching Style: The First Four Lessons of Fourteen University of Chicago Students, Categorized by the Conceptual Systems Manual General Categories

GENERAL CATEGORY OF TEACHER BEHAVIOR

	Sanction	Handling Information	Developing Procedures	Maintenance	Total
Number of Communications	479 (163 negative)	1637	883	367	3306
Percent	14.5% (34.0% negative)	49.5%	26.7%	9.3%	100%

TABLE TWO

Initial Teaching Style: The First Four Lessons of Fourteen University of Chicago Students, Categorized by the Conceptual Systems Manual Sub-Categories

SUB-CATEGORY OF TEACHING BEHAVIOR

	S_1	S_2	S_3	S_4	S_5	I_1	I_2	I_3	I_4	I_5	P_1	P_2	P_3	P_4	Maint.		Total
															M.	Other	
Number	2/0	21/46	239/69	39/40	15/8	62	168	313	727	167	11	119	753	0	168	139	3306
	(ΣS = 479)					(ΣI = 1437)					(ΣP = 883)				(ΣM = 307)		
Percent	0	14	65	17	4	4	12	22	50	12	0	14	86	0	55	45	

[1] of general category

(Combined Reflective = 14.1%)

(Questions = 33.2%)

(Combined Reflective = 14.7%)

The students taught for three six-week periods, Fall, Winter, and Spring. The first weeks of the Fall period yielded our index of their initial teaching style. Let us now turn to the third period and examine their communications to children during that period.

Table Three shows the general categories for the third student teaching period. Comparing Table Three with Table One, shows the drop in sanctions of almost 7% with a use of 5% in the information category and 4.4% in procedural communications.[1]

We have speculated without conclusion on the drop in sanctions. It may reflect the students' growing comfort in the classroom (they may have stopped filling silence with "well done's"). On the other hand, they may have become socialized to the matter-of-fact social climate of the school, where achievement is taken as a matter of course and not rewarded constantly. If developmental studies continue to report this finding, the cause needs to be investigated. We are especially curious that the change was true of almost all the students.

The increase in procedures may have been part of their growing ability to handle groups of children. In some students, as we will see, the shift toward reflective procedural communication seemed to be accompanied by a sharp rise in total amount of attention to procedures.

Turning to the sub-categories, we can see that there was no shift toward reward of search. This was despite the fact that many lessons were planned to help children develop and explore hypotheses! The teaching styles did not expand to include this behavior. Except for reduced frequency, the sanctions picture did not markedly change. Attention to rules and group process was still largely negative and reward of attainment continued to dominate the category. This was true of individuals as well as the group, and individuals did not produce much variability in the sanctions department. However we teased the data, they seemed to reward and punish about the same way - but much less, at the end as in the beginning!

Within the "Handling Information" category, there was a marked shift toward questioning $(I_1, I_2, I_3,)$ which in the third quarter totalled 66.4 percent of the category against 33.2 percent for the first four lessons. The increase in reflective (open) questions was on the same order (from fourteen to twenty-nine percent).

Hence, the students asked many more questions -- and many more open or reflective questions during the third quarter than they asked proportionately during their first four lessons.

Within the Procedures category there was another substantial shift -- again in the direction of "reflective" or integrative behavior. For all

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[1] The T-test for correlated samples revealed that the change in Sanctions and Procedures was significant $(p < 01)$ whereas the change in proportion Information Handling was not significant $(p < .10, > .05)$.

TABLE THREE

Third Quarter Teaching Style: The Last Six Lessons of Fourteen University of Chicago Students, Categorized by the Conceptual Systems Manual General Categories

	GENERAL CATEGORY OF TEACHING BEHAVIOR				
	Sanctions	Information	Procedures	Maintenance	Total
Number	298 (77 negative)	2081	1225	213	3817
Percent	7.8% (25.8% negative)	54.5% (29.3% Reflective)	32.1% (27.5% Reflective)	5.6%	

TABLE FOUR

Third Quarter Teaching Style: The Last Six Lessons of Fourteen University of Chicago Students, Categorized by the Conceptual Systems Manual Sub-Categories.

SUB-CATEGORY OF TEACHING BEHAVIOR

	S_1	S_2	S_3	S_4	S_5	I_1	I_2	I_3	I_4	I_5	P_1	P_2	P_3	P_4	Maint.	Other	Total
Number	$2/_{1}$	$9/_{10}$	$183/_{20}$	$6/_{31}$	$23/_{15}$	91	519	772	679	20	0	337	809	79	191	22	3819
		($\Sigma S = 300$)					($\Sigma I = 2031$)					($\Sigma P - 1225$)			($\Sigma M - 213$)		
Percent*	1	6	68	12	13	4	25	37	33	1	0	27	67	6	90	10	

(29.3% Reflective)
(66.4% Questions)

(27.5% Reflective)

*of general category

students, the shift was from 14.8 percent reflective behavior, (see Table Two) to 27.5 percent reflective behavior, a shift of the same order as the shift within the handling of information category.[1]

Hence, the students, taken as a group, reduced their sanctioning behavior substantially, increased their attention to procedures, asked many more questions and more open questions, and developed procedures more cooperatively as the year wore on.[1]

However, our purpose in instructional flexibility training was not to move them toward more reflective or indirect behavior -- it was to increase their flexibility of performance. We can employ four techniques.

1. First, we can consider the variability among lessons the students taught and ask: "Did they increase in variability of behavior from lesson to lesson as the training program proceeded?"
2. Second, in the third quarter we asked the students to teach lessons on models that required differing patterns of behavior. We can then ask "Did their patterns of behavior vary significantly from model to model?"
3. Third, we can examine individual students and the changes that occurred in their patterns.
4. Fourth, we can see if the development differed when students whose initial patterns were reflective or open in character are compared with those who were closed in character.

Variability Among Lessons

As a teacher moves from lesson to lesson, does he change his patterns with changing objectives, changing reactions from students, changing group dynamics? Since variability is one of the desired products of our training program, we compared the variability our students produced in their first lessons with the variability they produced during the third quarter.

With respect to sanctions, variability between categories was not great, partly because reward and punishment of attainment dominated so much. Variability within that category was not significantly different from the first to the third quarter when we consider all of the students, but two or three students showed some fluctuation.

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[1] However, when individual lessons are considered, the reflective handling of information and cooperative development of procedures did not co-vary. The coefficient of correlation between them was .23 in the first quarter and .06 in the third quarter. In other words, many lessons which were reflective in the handling of information were not marked by the cooperative development of procedures and vice versa.

With respect to information, we have previously noted that there was a substantial increase in questioning and in reflective (open or evaluative) questioning. To determine whether there was a change in variability, we computed the variances for reflective handling of information for the first quarter and the third quarter and compared them; the F ratio was 2.42 (p .10) so that we cannot say that the difference in variances is significant. We followed the same procedure with respect to procedures, calculating the variance in reflective or cooperative procedural communications for the first and third quarters. The variances were much closer (F=1.26) and did not nearly reach significance.

Maintenance communications dropped in frequency but were almost identical in variance when the first and third quarters are compared.

Hence, our developmental study did not indicate change in variability within any of the categories, although the variance in handling information reflectively approached a significant change.

Lessons Built on Models

Since our concern was to measure in "flexibility" of style, we augmented our developmental study by asking the students to teach lessons built on four models. One was a "cooperative planning" lesson, one was a "character analysis" lesson, involving the development of successive hypotheses regarding characters in a story, one was a Suchman-type "Inquiry-Training" lesson, and one was a "Concept Formation" lesson involving presentation of a task not unlike those found in A Study of Thinking.[1]

If the student is able to shift into each of these models, then his teaching style should reflect the shift.

The character analysis lesson, for example, should show very little reflective (cooperative) development of procedures, but much reflection in information-handling. Table Five shows the classification of communications for the character-analysis lessons.

Table Five

Classification of 5/6 Communications
for Character-Analysis Lessons

	Information		Procedures	
	Reflective	Non-Reflective	Cooperative	Directive
Percent of Total Communication	37	18	03	17

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[1] Jerome S. Bruner, Jacqueline Goodnow, and George Austin. A Study of Thinking (New York: Wiley, 1955).

Hence, the shift in styles was what would be predicted if the models were followed.

The Concept-formation lessons involve directed presentation of stimuli with the teacher informing the students which stimuli contain the concept and whether they have attained it or not. The lessons should not be reflective in information-handling nor cooperative in the development of procedures. Table Six presents the results of those lessons.

Table Six

Classification of 403 Communications
for Character Analysis Lessons

	Information		Procedures	
	Reflective	Non-Reflective	Cooperative	Directive
Percent of Total Communications	9	38	8	37

The shift in styles followed the model in this case also.

Although there was variation among the students, the same general shift was true of the other models, although we did not receive lessons from all the students.

While the results here would support the conclusion that the students were able to shift styles to conform with models of teaching, we hasten to point out that this may have been true prior to flexibility training -- these data are presented to illustrate how a developmental study can be enhanced by controlling some of the conditions of teaching (in this case the model) in order to study certain aspects of teaching (in this case the ability to shift with the model).

Case Studies

The developmental study can also focus on the individual student. Table Seven presents the patterns of twelve lessons taught by a student whose personality measures showed her to be very flexible and open. Her initial style was both relatively unvarying and did not show much reflective handling of information or cooperative handling of procedures.

Even a visual inspection reveals that her variety of style increased with the acquisition of more reflective and cooperative behavior, and decreased as she rewarded and punished less often.

Case studies of this kind can be shaped to reveal many things that are useful for diagnostic purposes as well as judging effects. For example,

TABLE SEVEN

The Developmental Record of the Teaching Style of One Student

Category

		S_1	S_2	S_3	S_4	S_5	I_1	I_2	I_3	I_4	I_5	P_1	P_2	P_3	P_4	Maint.
Percent	1			12.7					25.4	31.8			3.2	4.7		22.1
of	2		1.0	14.8	1.0				31.8	12.7	1.0			8.8		29.9
Total	3			4.8					33.3	4.8	33.3			14.3		9.5
Com-	4				4.3	4.3		13.0		30.3				39.1		9.0
munica--	5				3.2				12.9	22.6				54.8		6.5
tion for	6			2.2				4.5	12.4	25.8			7.9	37.1		10.1
the	7			5.8		1.9		1.9	42.3	23.1				9.6	13.4	
Lesson	8			12.3			2.5		33.3	9.9			9.9	14.8		17.3
	9			7.9				1.6	3.3	42.6	18.1		3.9	7.1		13.4
	10							10.0	50.0	2.5	12.5			7.5	10.0	7.3
	11			1.8			3.8	50.0	5.4	17.8			1.5	12.5		7.1
	12							17.4	2.2	41.3			6.5	26.1		6.5

when a student who naturally uses very little reflective behavior tries to ask questions that require students to raise hypotheses, we sometimes find that his controlling behavior rises tremendously. He seems to compensate for the change at one point with a change at another point. As some students learn to ask the jugular question, they suffer a period of awkwardness as if the change in one part of his style dislocated other parts. It may turn out that developmental studies can help locate optimal styles for the individual. Frequently teacher education procedures seem to push all students toward the same good teaching. It may be that discovering optimal styles for each would be a better objective.

A case study sometimes reveals serious weakness. We observed one student who was very good in theoretical grasp of education -- a real delight for us to teach -- but whose control problems were very serious. Her developmental record revealed that she was not engaging in very much procedural behavior. She was trying, it seemed, to control through informational communication and was not developing plans with the children or letting them know plans she was going to impose. As she recognized this, she was able to practice lessons on a "cooperative inquiry" model and slowly improved her control without becoming harsh or authoritarian. We are not always so fortunate. We picked up the same weakness in a student this year and were not able to help her.

Special tasks, such as Hunt's Communication Task, which enables us to diagnose differences in interpersonal sensitivity in teaching and also the effects of training,[1] and Weinstein's Strength Task, which enables diagnosis of interpersonal strength in teaching,[2] extend a developmental study to include the analysis of aspects of teaching that are difficult to isolate on tape or in live observation. For example, this year we are using the Communication Task type of situation to provide developmental data on groups which are undergoing different programs of sensitivity training.

Examination of Sub-Groups

Are the students who change most in teacher training those whose initial styles are most varied -- or are the greatest changes in those who, like the girl in the case study just presented, begin with the restricted styles? Are there important personality variables that affect the developmental pattern?

In our small sample of students ($N=14$) it is difficult to illustrate subgroup differences where significance emerges, but we have two examples where the developmental study helped us study subgroups.

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[1] David E. Hunt, The Communication Task, Syracuse University, 1965, unpublished.

[2] Gerald Weinstein, The Strength Task, Syracuse University, 1965, unpublished.

Since much of the increase in variety of teaching behavior resulted from a shift toward more reflective handling of information and procedures, we thought that the greatest changes might have occurred in those students whose patterns were most restricted initially. Hence, we identified the four students whose patterns exhibited the greatest and least variety in the first quarter and examined their styles in the third quarter. Both groups showed changes of almost equal magnitude. In each group one student's pattern changed almost not at all. In each group one increased variability somewhat and the others quite a bit. We feel that this is a question that needs exploration with a good-sized sample. It may well turn out that initial style has much to do with susceptibility to change of various kinds.

Personality Factors

In previous studies, we have concluded initial teaching style seems related to certain personality factors[1] which are measured by the Sentence Completion Test.[2] We confirmed this finding with the fourteen Chicago students, then found that the differences disappeared by the end of the first quarter, but appeared to widen again by the end of the third quarter, (Table Eight) although the difference does not reach significance (F=2.30, p .10). The more and the less abstract students both increased in variance and in shift toward reflective handling of information.

Table Eight

Information Handling of
Students differing in Abstractness
of Personality Organization

		Percent of Reflective Behavior	
First Quarter	X	8.2	7.4
	X	228.	207.
	X^2	4194.	4385.
Third Quarter	X	17.6	13.3
	X	566.	398.
	X^2	18005.	10025.

Hence, we cannot conclude that there differences in abstractness of personality significantly affected variety of teaching style or shift toward reflective handling of information, although in the latter case the near significant differences in sample means indicate, due to the small number of students, that the matter is worth pursuing with larger groups.

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[1] David E. Hunt and Bruce R. Joyce. "Personality and Initial Teaching Style."

[2] O.J. Harvey, David E. Hunt, Harold M. Schroder. Conceptual Systems and Personality Organization. New York: Wiley, 1961.

Implications

We have attempted to illustrate the use of developmental studies of teaching styles in the evaluation of procedures of teacher education. Although we were unable, with our small (14) number of students, to evaluate the instructional flexibility training model with use of control groups and groups receiving differential treatment within the control, we produced a developmental study of the styles of fourteen students that both illustrates the use of the developmental technique and, in itself, has implications for future research.

First, the nearly uniform reduction of rewarding and punishing behavior needs further investigation. Does the socialization of new teachers result in less "rewarding" behavior? Or is the large amount of rewarding and punishing in initial styles a superficial behavior which does not have a rewarding or punishing effect on children?

Second, our failure to teach our students to reward exploratory behavior by children disturbs us. Were we making an unrealistic demand? Were our models inadequate? Were the conditions of student teaching such that it was difficult to create exploratory situations so that search could be detected and rewarded?

Third, when these fourteen students sanctioned rule or group-related child behavior, the sanction tended to be negative. Can we teach young teachers to reward interpersonal behavior? How?

Fourth, the fact that the students learned to handle information and procedures reflectively but continued to reward child attainment suggests that our models of teaching more adequately represented the informational and procedural aspects of teaching than the "social climate" aspects of teaching.

Fifth, the response of the students when asked to teach lessons constructed around a variety of models encourages us to explore this as an instructional technique within the instructional flexibility training model.

Sixth, the low correlations between the reflective handling of information and cooperative development of procedures, following such an intensive study of these fourteen students, suggests that characterizing whole styles as "direct" or "indirect" or teaching climates as "authoritarian" or "democratic" may obscure some of the important component elements of teaching styles. It may also be that when models are presented to young teachers, attention has to be given to more than one aspect of teaching. It may not be wise to try to affect solicitation or questioning patterns, for example, without taking other aspects of teaching into account.

Appendix 10 D

Classroom Social Systems in Teacher Education[1]

Louis M. Smith[2]
Central Midwestern Regional Educational Laboratory

INTRODUCTION

This paper is one of several which propose conceptual frameworks important in teacher education. The specific purpose of this presentation is to discuss aspects of "the classroom as a social system" and its implications for teacher training. While reference will be made to a variety of research and theory, the major ingredients will be generated by the author's own recent research (Smith & Geoffrey, 1965, 1968, and Connor & Smith, 1967) and the author's teaching of undergraduate and graduate educational psychology.

Briefly, because we will cite aspects of these documents at length, we need to introduce them further. The Smith and Geoffrey (1965) monograph is a report of an observational study of a seventh-grade classroom in a slum neighborhood. Geoffrey was the teacher. He also kept notes of the events of the classroom. Smith was the outside observer who attended "all day-every day," sat at a table in the back of the classroom, and took careful field notes of the events of the classroom. From these "inside-outside" records the two investigators developed a description and conceptualization of the classroom structure and processes, or what they called "an analysis toward a general theory of teaching." The Connor and Smith (1967) monograph was similar in approach (description and conceptualization) but studied the apprentice teaching program at City Teachers College (C.T.C.). The program was novel in that the apprentices spent two weeks at each grade level (K-8) in what Connor and Smith labeled a "two by two" program. Within the two-week period the apprentices observed the first day, taught one lesson the second day, two the third, and so on. On Wednesday of the second week they taught all day with the teacher in the classroom; on Thursday they taught all day, but alone. We utilized participant observation to understand the behavioral and experiential dimensions of the program in the lives of a small group of the apprentices.

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[1] Prepared as one part of project "A Conceptual Model of Teacher Education," principal investigators Joyce, Foshay, and Weinstein of Teachers College, Columbia University, July 1968.

[2] On leave of absence as Professor of Education and Psychology from Washington University, St. Louis.

Although of less significance for this document, we have used these techniques in two other settings: an innovative elementary school (Smith & Keith, 1967, 1969) and a high school science class (Smith & Brock, 1968). At times in this document we will quote or paraphrase aspects of these works.

Briefly, the author's teaching relevant to this paper has included an undergraduate educational psychology course and a text (Hudgins & Smith, 1964) which reflects some of his early biases. At the graduate level, some five years ago he began teaching a course entitled "The Classroom as a Social System," from which many of the present ideas have taken shape. In a sense, the ideas have been tried, revised, and retested against groups of experienced teachers. Finally, in a seminar of the same title, doctoral students have worked through research issues and topics related to the topic under consideration. Such is the context and basis of the analysis.

THE CONCEPTUAL FRAMEWORK

The Classroom as a Social System

In a brief presentation it is very difficult to review the wealth of ideas currently encompassed in the social system point of view. By system we mean an interdependent set of elements; by social we have reference to people. In a sense this is a redundancy or an accent, because people are one aspect of the elements. By classroom we refer to a unit of the school--usually, but not necessarily, the 30' x 30' cubicle with a teacher and 25 pupils.

The most useful general statement of the social system position is that of the sociologist George C. Homans, found in his book, The Human Group. He introduces a number of concepts: group, environment, internal system, external system, social rank, norms, activities, sentiments, and interaction, which are useful in analyzing any particular social system. He builds his conception inductively by sequentially considering case studies of several groups: industrial, street corner, primitive society, and rural community.[3] He does not deal with an educational group. Smith and Geoffrey (1965, 1968) quite deliberately adopted the Homanian perspective in extending it to an elementary classroom in an urban slum. They accented further such concepts as teacher decision making, initial teacher roles, and pupil role structure, which seemed important in their data and useful for analysis of other educational settings.

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[3] We will explore this in more detail as we indicate training procedures at the inservice level in a later portion of this document.

Such a conception seems important because: (1) It accents a limited part of reality with which a teacher must deal; (2) It is important phenomenally, for principals, parents, pupils, and other teachers view it as an entity and consequently act with this, i.e., Miss Brown's class, as a determinant of their own behavior; (3) It has boundaries both physically and psychologically; (4) Typically, it has a time dimension, that is, a beginning in September, a development through the first few days and weeks of the fall, an equilibrium which carries through most of the year, and then a termination in the late spring.

For the teacher, system analysis has several other very important, if less obvious, qualities. In the words of A. W. Gouldner (1961):

> 1. System models forewarn the applied social scientist of the possibility that a change in one part of the system may yield unforeseen and undesirable changes in another part of the system, due to the interdependence of its elements.
>
> 2. System models indicate that changes may be secured in one element, not only by a frontal attack upon it but also by a circumspect and indirect manipulation of more distantly removed variables. These, because of system interdependence, may ultimately produce the desired changes in the target variable.
>
> 3. . . . system analysis therefore directs attention to the multiple possibilities of intervention with respect to a single problem. (p.90)

Somewhat tongue-in-cheek, Simon (1961) takes the same kind of position interdependency in the following anecdote:

> There is a story to the effect that a statistician once found a very high correlation between the number of old maids and the size of the clover crop in different English counties. After puzzling over this relation for some time, he was able to trace what appeared to him to be the causal chain. Old maids, it appeared, kept cats; and cats ate mice. Field mice, however, were natural enemies of bumblebees, and these latter were, in turn, the

> chief agents in fertilizing the flowers of the clover plants. The implication, of course, is that the British Parliament should never legislate on the subject of marriage bonuses without first evaluating the effect upon the clover crop of reducing the spinster population. (p. 82)

Another manner of labelling the Gouldner-type implications is that of anticipated and unanticipated consequences. These terms grow out of Merton's (1957) more general functional theory. For our use it is important to realize that in a purposeful action system, such as a classroom, individuals take action toward goals. The actions have "anticipated consequences" which are subgoals or steps toward the more remote goals. However, the action, because of the interdependence of the elements, often will have an array of consequences which the actor did not intend or anticipate. These unanticipated consequences will often become highlighted as future problems about which decisions will be made.

In short, the social system concept has a potency for a teacher who must work with and influence, a totality such as a classroom. The interdependency or mutual dependency of elements is its major thrust.

Teacher Decision Making[4]

A very important ingredient of the classroom social system is the position and role of the teacher. We are in agreement with Jackson's point of view:

> From a clinical perspective the central 'causes' of behavior reside within the individual. A person does what he does, in this view, because of interests, needs, motives, values, and other internal motivational structures. Therefore, to understand behavior, the argument continues, it is necessary to reveal these hidden springs of action. . . .
>
> But the view of behavior gained from standing in front of a class is of quite a different order. From the

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[4] This section draws heavily on Chapter four of Smith & Geoffrey (1968).

> teacher's perspective much of the behavior he witnesses seems to be 'caused' not by some set of mysterious driving forces hidden within his students but by his own actions as a teacher. If he tells his students to take out their spelling books, the spelling books appear, if he asks a question, hands go up, if he calls for silence, he usually gets it. In other words, many obvious and dramatic shifts in students' behavior are largely under his control. This is not to say that his students are merely marionettes who twitch on command. . . . But for the most part, classrooms, like churches and cafeterias, are such highly structured and coercive environments that the observer does not need a detailed knowledge of the internal states of the participants in order to understand what is going on there. Motives, interests, needs, and other psychic mechanisms surely affect behavior in these settings but the influence of these idiosyncratic motivational structures is greatly tempered and restrained by situational demands. The clarification and management of these demands make up a central part of the teacher's work. As he seeks ways of trying to do his job better, the teacher who turns to an intensive study of personality dynamics or psychological pathology may discover that he has learned more about alligators than he needs to know. (Jackson, 1968, p. 172)

Further, it seems that a serious discontinuity exists within educational psychology. The language of learning theory - - Hull, Mowrer, Skinner, or other behaviorists -- used to analyze the behavior of children cannot easily be used by the teacher to analyze and alter his own behavior. The child's "rationality" and autonomy are minimized as the program and the reinforcing contingencies are accented. The teacher, however, usually is implored to be rational, to plan carefully, to meet the child's needs, and so forth, as though the locus of control lay within himself. The teacher who thinks about his own behavior as a series of operants has difficulty in synthesizing these positions. We believe the issue lies fundamentally in the heart of contemporary social science theory, and we do not propose anything like a basic solution.

On the one hand, this has led us toward a broad social system conception of the classroom. Also, and as an extension of the Homans' framework, it has led us to a purposive framework, the perspective of the teacher as a decision maker. In the classroom much of the broader school policy and the substance of faculty norms reaches the classroom only as it is mediated by the teacher's personality, especially his decision making processes.

As we looked to more general theory on decision making, we found discussions of fact-and-value propositions, rationality, alternative, subjective probability, consequence, effectiveness, and so forth. Teaching often involves doing or not doing something such as tossing or not tossing a chalkboard eraser to a child as a dramatic illustration of a direct object in language. "Choice behavior" is part of the decision maker's conceptual repertory. It is also part of the teacher's schema. Lying behind such a choice are the teacher's objectives in language arts for the morning. Objectives are goals and values to the decision maker. The teacher suspects that such action on his part will startle a few children, provide a concrete illustration of an important concept, and will give him a chance to compliment lightly or tease gently one of the boys for his skill or lack thereof. The decision maker, conceptually, refers to these suspicions as subjective probabilities. The several events that might occur are, to the theorist, consequences. Later, when the children report such an incident to their friends, within earshot of another teacher, other events may occur that the sociologists call latent and unanticipated consequences.

In addition to throwing or not throwing an eraser, the teacher also may dramatically snap a new Board of Education pencil into pieces, call a child up front and rap him lightly on the head with a flourish, or he may draw humorous stick-figure cartoons on the board. In the theorist's terms, any one of these are alternatives. They, too, have consequences. The consequences have several probabilities as seen by the teacher, and we might phrase his behavior as "subjectively rational." Theorists might attack this illustration analytically with concepts such as objectively rational, organizationally rational, and so forth.

The Prediction System

Schematically, a cogent analysis of decision making has been made by Bross (1953). He suggests a model involving a prediction system and a value system. Very simply, in his diagrams the prediction-system choices lead to alternatives, and alternatives to consequences. The consequences have varying probabilities. Although his diagrams do not indicate them, arrows should run from Alternative A-1 to the Consequences following from A-2, and vice versa. The probabilities may be close to zero but they should be indicated.

In addition, his figure should be elaborated to account for latent and unanticipated as well as manifest consequences.[5] Through-

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[5] In another project, (Smith and Keith, 1967) we made an intensive analysis of this conception.

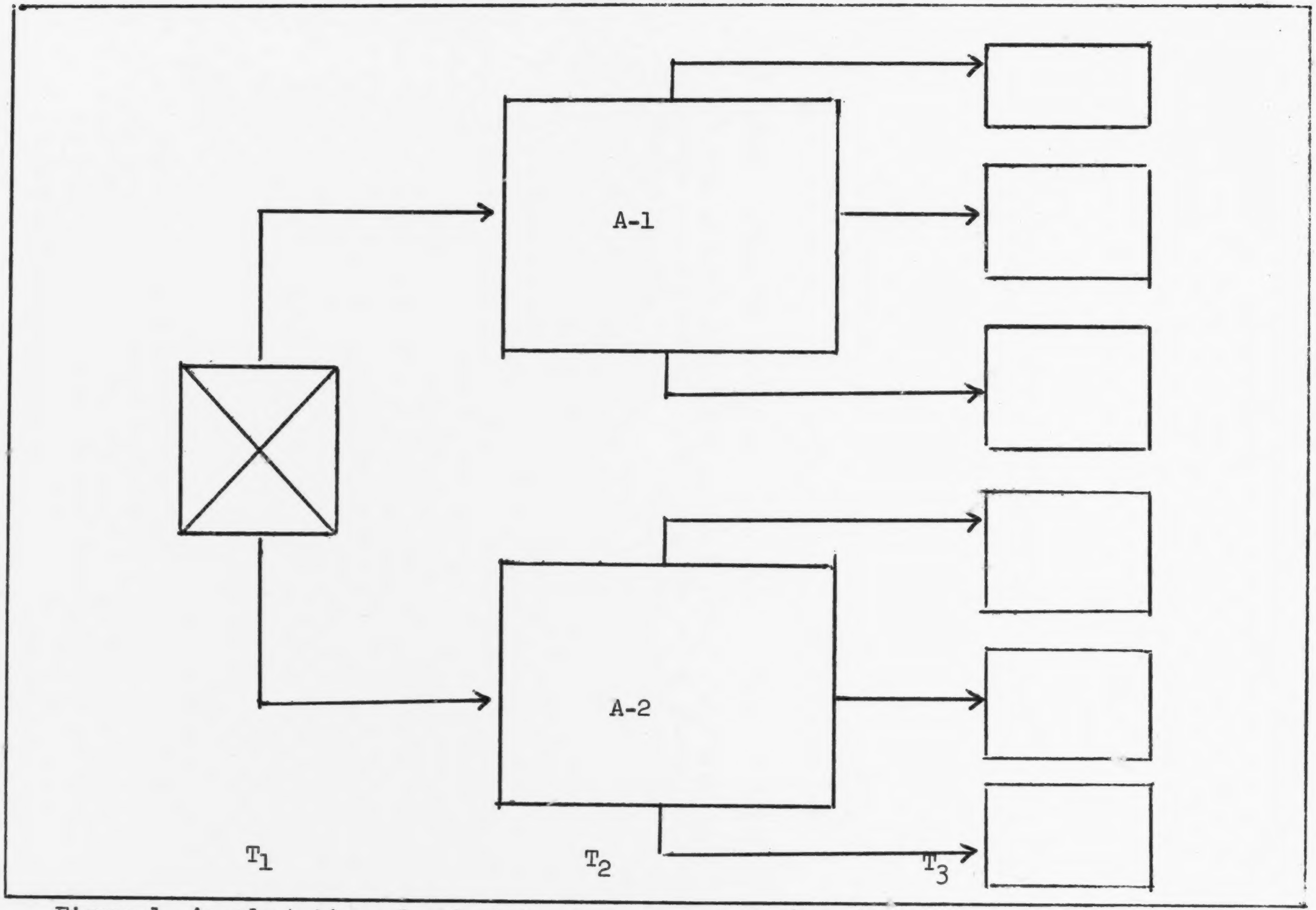
A-1
A-2
T_1
T_2
T_3

Figure 1 An adaptation of a decision tree from Bross (1953).

out accounts in the description of the development of classrooms, alternatives arise which seem plausible to the outside observer. On occasion, as these are suggested to the experienced teacher, he will react with an intuitive feeling that this would not be appropriate. In conversation, the teacher may elaborate a variety of consequences that an observer has only partially anticipated. An illustration of this occurred early in the semester as reported by Smith and Geoffrey (1968) with the concept of "pacing" and the slow speed with which the children were introduced to academic content. The notes captured the teacher's reaction:

> His statement concerned earlier experience in which he tried to rush the children (and rush probably would be defined as moving them along faster than they would want to be moved by themselves).
> Moving more rapidly, in his experience, has often resulted in not getting very much farther in the long run, and at the same time, frustrating everyone, the children and himself, and creating, as a consequence, several emotional problems in the group. (p. 90)

The Conception of the Ideal as an Approach to the Value System

As we have elaborated, decision-making involves what we have called, after Bross, the prediction system and the value system. The latter presented us with a number of difficulties. In most situations requiring a decision it is impossible to: (1) determine the desirability of each alternative, (2) compare these desirabilities and undesirabilities and combine them into a meaningful summary. Among the many reasons for this, the lack of scales with common meaningful zero points and units is the most important. In wrestling with this problem, analyzing our own decisions, and attempting to order our data, we have found that a model involving a "conception of the ideal" makes a more satisfactory point of departure.

In the vernacular this might be phrased, "If you had your druthers how would you like things to be?" or "What do you see as the optimal equilibrium?" or "What is the best of all possible worlds?" Such a statement implies the following as a minimum:

1. An assessment of the desirable elements.
2. A pattern including an ordering or priority of the elements indicating their importance.
3. The pattern of one system, for example one's job, must be articulated ultimately with other systems,

family, "self" as a person, and so forth.
4. The ideal may change momentarily or over long periods of time.
5. The system may be congruent or in conflict with systems of other individuals, groups, or institutions.

In essence, this involves a careful elaboration of an individual's goals. As value premises these are statements of wishes and desires. The ultimate goal, whether it is a well-considered philosophy of life, religious position, or ethical social-political framework, is a statement of first principles, which, because they are first principles, by definition are not derivable from other propositions. Classroom goals and conceptions of the ideal must necessarily fit into this and relate to the ultimate goal with varying degrees of probability. Classroom ideals must also effect a compromise among personal, group, organizational, and community positions.

Combining the Prediction and the Value Systems

In one sense, decision making involves a very simple judgment as to whether the prediction system surrounding one alternative or chain of alternatives corresponds more closely to the ideal conception than does the prediction system following the selection of another alternative. Obviously, decisions are not that easy.

For example, one teacher (Smith & Geoffrey, 1968) had to decide, after a month of school, which children would be sent to another teacher and which children would remain with him. The problem arose because a room in the school was closed. As he later commented on the decision, the prediction and value elements stand out rather dramatically:

> I decided to send to her the group I had received at the beginning of the year--mostly repeats from Rooms 13 and 14 and new students who had come in. I kept the other natural group--those who had come to me from Room 16 group, and I felt the seventh-grade group would fit better with the sixth graders than would the other group . . . . the numbers were okay per the instructions from the office . . . . I was sensitive to what had happened the previous year. I chose the simplest way administratively and one which I thought she would have the least complaint about.

And in regard to the complications arising from the fact that several groups of siblings were involved:

> Some of these kids had been together anyway. Since I made the decision by groups I saw no particular reason to make any exceptions. . . . After all, I had both Allison and Edwin together anyway, and she (another teacher) had both Patty and Rose together. All-in-all, again, I took the simplest way to a decision--by the groups in which the children came to me.

Strategically, we would hypothesize that the process proceeds more effectively when one frames his ideal or value system first. By asking for an organized statement of ends, conditioned by the time, place, and circumstances in which decisions must be made, one introduces what is usually called flexibility and rationality. Then, as soon as alternatives are raised at any choice point, one can compute probabilities of an alternative aiding the attainment of a goal or subgoal. Future research is needed to verify hypotheses in teacher attempts to combine prediction and value systems.

Operationalizing the Decision Making Model

The decision making model has tremendous possibilities in conceptually linking such diverse influences on the classroom as the formal curriculum guides, the faculty peer-group beliefs and norms, the composition of the class itself, and treating teaching functionally rather than just structurally. To make the conceptual models viable, operational techniques become mandatory. For a long period of time we had considerable difficulty in thinking through concrete ways in which we could implement the model in field research with ongoing classes. While our discovery, if it be that, sounds simple as hindsight, the process of arrival was slow and difficult. The lead we see here combines several elements: first, one must establish several "natural" units in teaching--the lesson, the day, the week, the unit or the semester. It is our belief that the unit will vary with a number of conditions. For instance, some spelling programs have basically a weekly rhythm within which there are also daily regularities. Some activities, independent reading, library books, and book reports have a semester unit as the rhythm.

If we select a single lesson in a subject such as geography we can illustrate further. The model requires that the teacher be quizzed via questionnaires or interviews concerning his goals (the value system) and the means (the prediction system) for reaching the goals in the geography lesson. An alternative, which has the beauty of objectivity and ease of access, is to make the age-old "lesson plan" into a functioning research tool.[6] In the case of many an experienced teacher, the lesson plans in geography lay in his head, in the text, and in assignments registered in his plan book, which many teachers are supposed to keep up to date.

After selecting the unit and obtaining quantifiable statements of plans and intentions, the third step, careful observation of the lesson--with a move toward reliable quantifiable schedules--would then occur. Post-lesson interviews or questionnaires concerning altered goals and means and cues that suggested to the teacher the need for alterations could be obtained. As a number of teachers in varying situations are studied, verifiable principles should be generated.

Such a mode of research would allow comparisons between school and teacher goals and would begin to clarify our concept of functional equivalents. It would permit a move away from an overall "good-bad" assessment in favor of more of the ebb and flow of teaching which many of our analyses have missed up to this time because we have focused on what the teacher does independent of his thought processes, and analyses of what he thinks, independent of what he actually does. Such research also provides a means of attacking the problems of inservice education and would lead to an altering of teaching in mutually desirable directions.

Additional Implications

With the model in hand, we began to see a number of additional implications in difficult problems. We entitled these legitimizing the "What do I do?" question, the best of a bad situation, congruence with teacher schema, model of the teacher training product, and treating children as decision makers.

The What-do-I-do? Question. By legitimizing the "What do I do?" question we refer to our many years experience with teachers who have been asking the question, "What do I do with this child, this situation, or this problem?" For as many years, in our experience, psychologists and teacher-educators have parried the question by remarking "It's impossible to respond to such a question; answers aren't that simple." The teachers complain to their colleagues about unhelpful experts. The psychologists and teacher-educators talk to their colleagues about the teachers wanting "something practical," "wanting a push-button psychology," or "wanting recipes."[7] The hypothesis we would offer is that the decision-making model legitimizes the teacher's question. By this we mean there is basic psychological theory where such a question is not heresy, but in its more abstract form holds a central position. For instance, in a literature lesson, what goals do I have? What are the specific ways I can present the material? What probabilities of success exist for changed attitudes? For increased information? For improved reading skills? A research-supported theory of teaching will indicate the probabilities of these relationships.

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[6] Incidentally, the research literature on lesson plans is almost barren. Conceptualization also provides possible articulation with the volume by Miller, et al, 1960. Currently we are underway with this kind of research, Smith & Brock, 1968.

The Best of a Bad Situation. The best of a bad situation suggests another group of difficult problems faced by the teacher. For example, a teacher may be faced with the dilemma of giving or not giving homework assignments. Part of his thinking may be predicated on such propositions as (1) These children are academically behind for their age and grade; (2) additional work beyond class time is necessary to maintain progress as well as to cancel the increasing discrepancy; (3) the students are apathetic and will do little homework; (4) the parents are disinterested in school and will not support the teacher's efforts; (5) assignments which are made but not carried out will weaken the teacher's power and control in future situations. As one analyzes such complexities in assignment making, one might ask what would the good teacher do in this instance. The decision model point of view suggests that each alternative or pattern of alternatives has outcomes scalable in desirability as well as probability. On occasion the range is from low or moderately undesirable to extremely undesirable. The solution rests in picking an alternative which, while not desirable in some absolute sense, is relatively more desirable than other alternatives. In the teacher's terms, you "make the best of a bad situation." Such an analysis fosters rationality, suggests pertinent research problems, and lessens the load of guilt carried by the teacher. Obviously one must guard against restriction in alternatives considered and rationalization in logical analysis.

Congruence with Teacher Schema. Congruence with teacher schema concerns the consequence of making the model conscious and explicit. If it can be established that teachers implicitly operate within this framework, then, we may have an important vehicle for moving from the "real world" to one we might call, on some grounds, more ideal. Specifically, we are thinking here of long, involved discussions that we have had with students who reject Skinner's image of man as it is presented in Walden 11 and Science of Human Behavior, and who have difficulty thinking of classroom problems in behavioristic terms. Some early field notes cast it this way:

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[7] One of the major exceptions to the shying-away tendency has occurred in the efforts of Fritz Redl and his colleagues.

> The model that keeps getting reiterated in the discussions of the teachers and the discussions of the pupils and the threats and warnings, the pleading, the arguing, is almost universally a responsibility model. In effect, it goes something like this: You as pupil are responsible for your own behavior, for getting your lessons, for getting to school, for doing the homework, and so forth. When you don't do these things, then you are liable to certain kinds of consequences that follow directly from not doing these things. You should be able to perceive these consequences, you should be able to plan for them, you should be able to alter your own behavior to handle the contingencies as they arise. This model seems to pervade everything that goes on in the schools. It is the kind of model that the Skinnerian approach has put into considerable doubt.

If the shifts one is trying to make do not demand reorganization of the basic dimensions of teachers' conceptual systems, the probability for alteration and innovation should be higher. Such an hypothesis in a psychology of teaching needs evidence.

The Product of Teacher Education. The model provides, for us, a clearer image of the product of a teacher education program and suggests some experiences, role playing, simulation, and successive approximation in classroom behavior, as vital but not currently prevalent. We are planning currently, to build situations and problems from our data and to present these in our teacher training program. We hope this will have a number of affective as well as cognitive effects upon our undergraduates in the preservice program.

The Child as Decision Maker. Another implication with which we are working is that in some contexts, teachers treat the children as decision makers. They act, both verbally and nonverbally, as if the children have choices, for instance, to attend or not attend school, to behave or not behave, to do their work or not. Pupils are held responsible, accountable for their actions. Often the teacher indicates the consequences that follow such choices on their part and which consequences he has control over--that is, which are alternatives in his own repertory. For purposes of the present discussion, we would hypothesize that the concept of the child as a decision maker is different from viewing the child as a product of operant and respondent conditioning. We state this a bit hesitantly for we recently finished an educational psychology text in which we take, in part, a strong Skinnerian bias (Smith & Hudgins, 1964). Also, we are hesitant in that we have not pushed, as yet, the comparison at any length or depth. On the positive side, it helps us integrate two aspects of the counselling and mental hygiene literature. Ralph Ojemann's (1958) "causality training" and E. G. Williamson's (1950) "clinical counselling" attempts to make clients more rational seem closely aligned with the decision making point of view. Mental health problems, we have argued, are an important dimension of the reality of cultural deprivation in the classroom. Insofar as these psychological positions can be integrated conceptually, they can be drawn upon for help.

Conclusion: Situational Thinking, Process, and Larger Structure

As we have sketched the prediction system and the value system, we have implied another set of considerations in decision making. These include situational thinking, process over time and the larger structure. By larger structure we mean the context in which the problem resides. As we have described a teacher's thinking about the children who would be sent to the next room, the context includes the teacher who would receive the pupils, the formal regulations, the informal staff and pupil norms, repercussions on the children, and so forth. In effect, we are asking for many of the items that would make more specific, complex, and elaborate the prediction and value systems. The benefits of a general theory of teaching arise here, for the necessary aspects and dimensions would be included, tentatively at least, in the general theory.

The concept of situational thinking accents the momentarily important aspects in time and space. For instance, in our data Mr. Geoffrey and one of his colleagues postponed some cooperative teaching plans in arithmetic and geography because they did not want to add another problem to the burden the principal carried at the moment, for he was busy with a variety of difficult and time-consuming issues. Also, they discussed, in terms of who had made the most demands recently, which of them would broach the subject. While this was cloaked in humor and repartee, it did not veil the intuitive understanding each had for the way the system worked.

Finally, the model stresses a time dimension, and consequently accents processes as well as structure. Each decision rests upon a past and has implications for the future. Related to this aspect of the process is the further notion that forces outside the teacher's immediate control influence the system and, as time moves on, the situation will be different and must be reanalyzed.

The Initial Teacher Roles

One of the most understudied phenomena in the psychology of teaching is the way in which teachers begin the school year. How do classroom systems get started? What are the problems teachers face? What consequences occur from different initial decisions and the tentative stances teachers take? As we have indicated, very little data exist. For our comments here we will appeal again to the analysis made by Smith and Geoffrey (1965, 1968). They argue that the teacher faces two major problems: Initiation of the activity structure and development of classroom control. By the former they mean that an instructional program must begin and that the teacher has major responsibility for this beginning. By establishing control they mean that the pupils comply with requests, instructions, and directions given by the teacher. The Smith and Geoffrey data are limited by the fact that the children were from a low s-e-s area, and it can be argued are much less receptive to the teacher's efforts in each area. Consequently, the tactics suggested may be more illustrative than compelling. The position seems congruent with points of view other teachers have taken.

Establishing the Activity Structure[8]

In the beginning of school the teacher has many problems. From the organization's perspective the key directive for the teacher concerns the establishment of the activity structure. As we have understood sociologists such as Homans (1950), an important part of the social structure of a group is the activity of the group, the transactions of the group with the physical facilities and environment. In the classroom, it is the "work" to be done. A major and often neglected part of classroom social-system analysis is the structure of activities. Activity is one of our basic dimensions. As we watched Mr. Geoffrey's class, we found that the children did a "variety of things" and this variety had special patterns. In the words of the teachers and the children, they studied a number of subjects. This simple taxonomy of the curricular areas, reading writing, arithmetic, and so forth, represents the public schools' attempt to order the "structure of knowledge" that has been accumulated in Western Civilization and to which the growing child must be socialized. In Big City, the school says there are eight of these areas for the seventh-grade teacher and their varying importance requires a set distribution of time.

The organization's official form for activity structure is the "teacher's program." Directions are explicit for each of the three parts of the form. In Part A the teacher is instructed to:

> Give the curricular area or subject studied in each period. Show your full school day including recess.[9]

The several columns require the teacher, as we have indicated in Figure 2, to indicate time of day, length of period, and subject taught each day of the week.

In Part B, the directions read:

> Summarize under the proper area the approximate number of minutes per week devoted to each area as shown in Part A of the program. Total each curricular area.

Geoffrey did this. The areas include fine arts (composed of music and art), language arts (which includes reading, language, spelling, and writing), mathematics, social studies, science, physical well-being (including recess and physical education), practical arts (not given in the fall in the seventh grade) and organization. The latter are those minutes at the beginning of each day in the morning and just after recess and lunch when "chores" are to be done.

The final part of the form, Part C, operates by implication and assumption. Its directions are:

> Copy the time allotment for each area from the Superintendent's Circular or from the Handbook for Beginning Teachers and Substitutes.

Geoffrey did this. The form included: fine arts, 180 (minutes); language arts, 520; mathematics, 240; social studies, 300; science 90; physical well-being, 260; practical arts, 110; and organization, 100.

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[9] These quotes and the following are from the official record forms used by Geoffrey.

Time of day	Length of period	M	T	W	T	F
8:30-8:35	5	Organization				
8:35-9:30	55	Reading				Language
9:30-10:15	45	Gym	Science	Gym	Science	Social Studies
10:15-10:30	15	Recess				
10:30-10:35	5	Organization				
10:35-11:15	40	Language				
11:15-12:00	45	Social Studies				
1:00-1:05	5	Organization				
1:05-2:00	55	Arithmetic				
2:00-2:30	30	Spelling and Writing				
2:30-3:30	60	Music	Art	Music	Art	Health

Figure 2. Copy of Mr. Geoffrey's teaching program as filed in the permanent records.

Interpretively we are saying several things at this point. First, a major part of classroom structure has its origins in the organization's primary purpose--fostering academic learning. Second, some degree of goal displacement occurs with the emphasis on the time allotments teachers spend in each category of activities. The system does test, at regular intervals, the achievement of pupils, but these results are "confounded" by pupil abilities and social-class factors that vary significantly across the city. Third, the implication exists in Part C that the teacher's program should be similar to the time allotments in the Superintendent's Circular. Fourth, the actual time of various activities varied markedly from the program as filed. For the moment, we would note that the pupils seldom were in the class before 8:37 in the morning and it was almost always 8:45 or later before attendance and lunch money collections had been completed. Also, as we shall indicate further, organizational problems arose all semester. Later we will examine in considerably more detail variations that exist in the heavy 3 R's orientation, especially in language arts, which go far beyond the stated time allotments. Fifth, the teacher has freedom to arrange these areas into the day and the week as he desires. It should be noted that his options do not include the time of the year--in the sense of doing the year's work in arithmetic in the fall and all the language arts in the spring. Similarly, limits exist in the degree to which the pupils have a voice in what activities are to be studied. Sixth, within the activity a large number of options exist in the sequence one might use in the presentation or the discovering of the accumulated knowledge. In the Washington School generally and in Mr. Geoffrey's case in particular, this part of the sequence was determined by the authors of the texts. In effect, Mr. Geoffrey and the children moved through the text page by page and, usually, problem by problem. Presumably this is one set of meanings to such phrases as "textbook-oriented curriculum," "systematic teaching," "traditional teaching," and so forth. Insofar as the text authors can clearly see their domain, this puts meaning into the activities. Insofar as one follows regularly through the text, this puts a procedural clarity into the activities. Pupils know what to expect. Most teachers at the Washington School believed that this is especially important for children with limited ability, with limited auxiliary skills (for instance, use of reference materials and related reading techniques), with limited motivation, and with limited self-control, all of which are alleged to be part of the syndrome of cultural deprivation. These implications are sketched in Figure 3.

In short, as the semester begins, one of the teacher's responsibilities involves the establishment of an activity structure. We might well phrase this as an important initial teacher

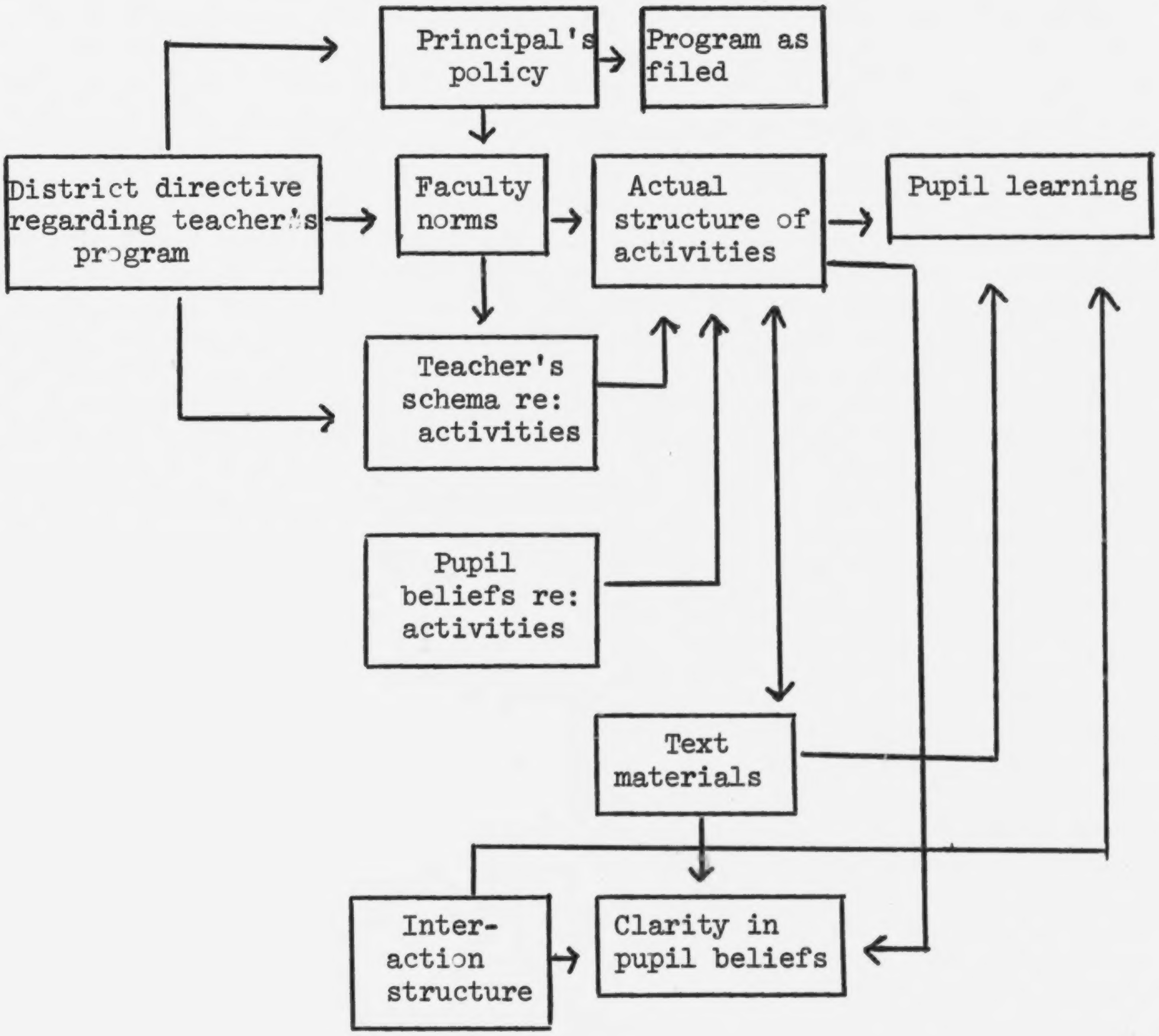
Principal's policy
Program as filed
District directive regarding teacher's program
Faculty norms
Actual structure of activities
Pupil learning
Teacher's schema re: activities
Pupil beliefs re: activities
Text materials
Inter-action structure
Clarity in pupil beliefs

Figure 3. A tentative model of the place of activity structure in the school.

role. The first few days contain the teacher's gambits into the several curricular areas. Prior experience "in school" has long since developed pupil beliefs and norms regarding the activities to be undertaken. The only novelty resides in a particular teacher's idiosyncratic ways of structuring the activities. As we have indicated, the central office directives and the faculty norms to which he must be sensitive often make his choices reasonably uniform.

Establishing Control[10]

Frequently teachers refer to a phenomenon which they label classroom control. Most educational psychology discussions do not make clear what teachers mean by this term. Instead they move into discussions of discipline problems, mental health outcomes, and terminological confusion centering on "democracy" in the classroom. The thesis we wish to state is quite simple: classroom control refers to the relationship between teacher direction, usually verbal, and a high probability of pupil compliance. If we separate teachers into those who have control and those who do not, then we have situations where pupils acquiesce and follow direction or they do not. The dichotomy may be thought of as a continuum. We may raise the question concerning compliance by the totalclass, various subportions of the class, and individual pupils. Further, we can subdivide according to situations ranging from the imperative of the fire alarm to chewing gum. And we may distinguish between responses to direct commands by the teacher and responses mediated by an activity suggested or imposed by the teacher; for example, does the child answer questions and carry out exercies in spelling as these were outlined and set in motion three weeks before? Finally, an array of antecedents and consequences of this multidimensional phenomenon can be investigated.

Once again, for illustrative purposes we appeal to examples from the Smith and Geoffrey monograph in which they describe how classroom life occurred in a particular slum school. The particular approach of Geoffrey's might well serve as a defined position against which to contrast other defined positions. The literature presents little detail of this kind. Verifiable research does not exist except for the exciting exploratory work of Kounin and Gump (1958).

Grooving the Children: Achieving Clarity in the Role. Mr. Geoffrey, saw this problem clearly and in quite simple terms. He acted upon the conception in a manner that we have called "grooving the children." Specifically, during the first few days he gave literally dozens of orders, to individuals and to the total group, which involved a number of trivial items. For instance, he handled the distribution of books by assigning each person a number, then calling out the numbers of the books from the storage cabinet, and having each child walk up and get his book. Later he modified this with "runners," children who distributed books to those children who raised their hands as he had instructed them. Next, he utilized the word "permission" over and over again. In the field notes, recorded before 9:00 A.M. on the first morning, "permission phrase appears and reappears." Interestingly, Geoffrey's statements showed situations requiring permission differentiated from those not requiring permission: "If you wish to leave the room to go downstairs, you must ask permission." And later, "For occasional borrowing, you don't need my permission."

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[10] These materials are abstracted almost verbatim from Smith and Geoffrey (1968,pp. 67-72).

Theoretically, we would argue that these interactions moved within the pupil group, toward a belief system: "The teacher gives directions and the pupils follow them." The immediate consequence of such a belief is the additional belief that future order-giving-and-following will occur in the same fashion. This eliminates questioning by the pupils and extended teacher explanations. It also eliminates rewards for compliance as well as punishments for noncompliance. This point is most important for our later discussion of bureaucratic versus personal authority. A more long-term consequence to which we will turn our attention later revolves around the implications for critical and creative thinking that demand that one doubt and question before one acts.

Finally, the development of this belief system to capitalize on several aspects: (1) the requests themselves were individually quite insignificant; (2) they dealt mostly with activities in which teachers are expected to be involved; (3) they were asked of everyone; consequently, to refuse would be to cast oneself in a special light; (4) the situations were cloaked with individual attention, warmth, and humor; (5) they often involved activities such as getting up and moving about, which was a pleasurable alternative to being seated for a long period of time; and (6) many of the requests involved volunteering and special, favorable attention. Some of these points are seen in the following episode:

> "Do I have any good pencil sharpeners?" Several boys raised their hands. He picks two who didn't pass out books. He directs them, "Out in the hall."

Beyond the development of the belief system as a relatively emotionless organization of cause-effect relationships, the association with conditions of positive emotion moves toward what we call a classroom norm containing both beliefs and sentiments.

In short, classroom control may be viewed as an important aspect of classroom social structure. In this sense it becomes a goal the teacher strives to reach. Our analysis has suggested that the teacher is faced with the problem of developing such a belief and normative system within the classroom. This time, however, the beliefs and norms center about his own role in the classroom. As we have analyzed our data, we described an interactional sequence, "grooving the pupils," in which Geoffrey gave orders and obtained compliance in a variety of mundane and critical situations. As these accumulate, they develop into belief systems--"this is the way it's done"--and ultimately into normative systems--"this is the way it should be done." Achievement of this goal has a number of potentially positive and negative consequences for further long-term goals. Figure 4 contains our summary model.

I Mean It: Second Steps in Establishing Belief Systems. Most of our examples have emphasized clarity of presentation of those aspects of behavior that Geoffrey wanted built into the belief and normative system of the classroom. Beyond clarity, Geoffrey's behavior contained an "I mean it" quality, which one might interpret as a threat or as a statement of cause-effect relationship. Our interpretation suggests that the teacher's performance needs analysis for implications in establishing the social structure of the classroom; in other words, threats must be distinguished as to whether they suggest cause-effect consequences that may or may not be punishing, or those that reflect punishment per se. The former seems evident in Geoffrey's interaction with Susan:

> "Who's been eating sunflower seeds?" Susan says she has. "Don't dine on them in the school room. I'll confiscate them. Who knows what confiscate means?" (Keep them.) "Anytime I collect food you'll be lucky to see it again." Geoffrey moves about checking papers. (9/10)

Following Through: A Third Step in Establishing Beliefs. Although we have used this illustration to indicate the "correct work" belief associated with pupil roles, we find that it illustrates beautifully the connecting link between dimensions of teacher performance, things a teacher does, and a major consequence or function of his behavior, firmly supporting the developing belief system. What we call "following through" is another dimension of teacher performance. Its meaning lies in the combination of an earlier statement of intent, frequently a warning or test situation, as in the sunflower seed episode, and now a demand that the pupil behave in accord with the rule.

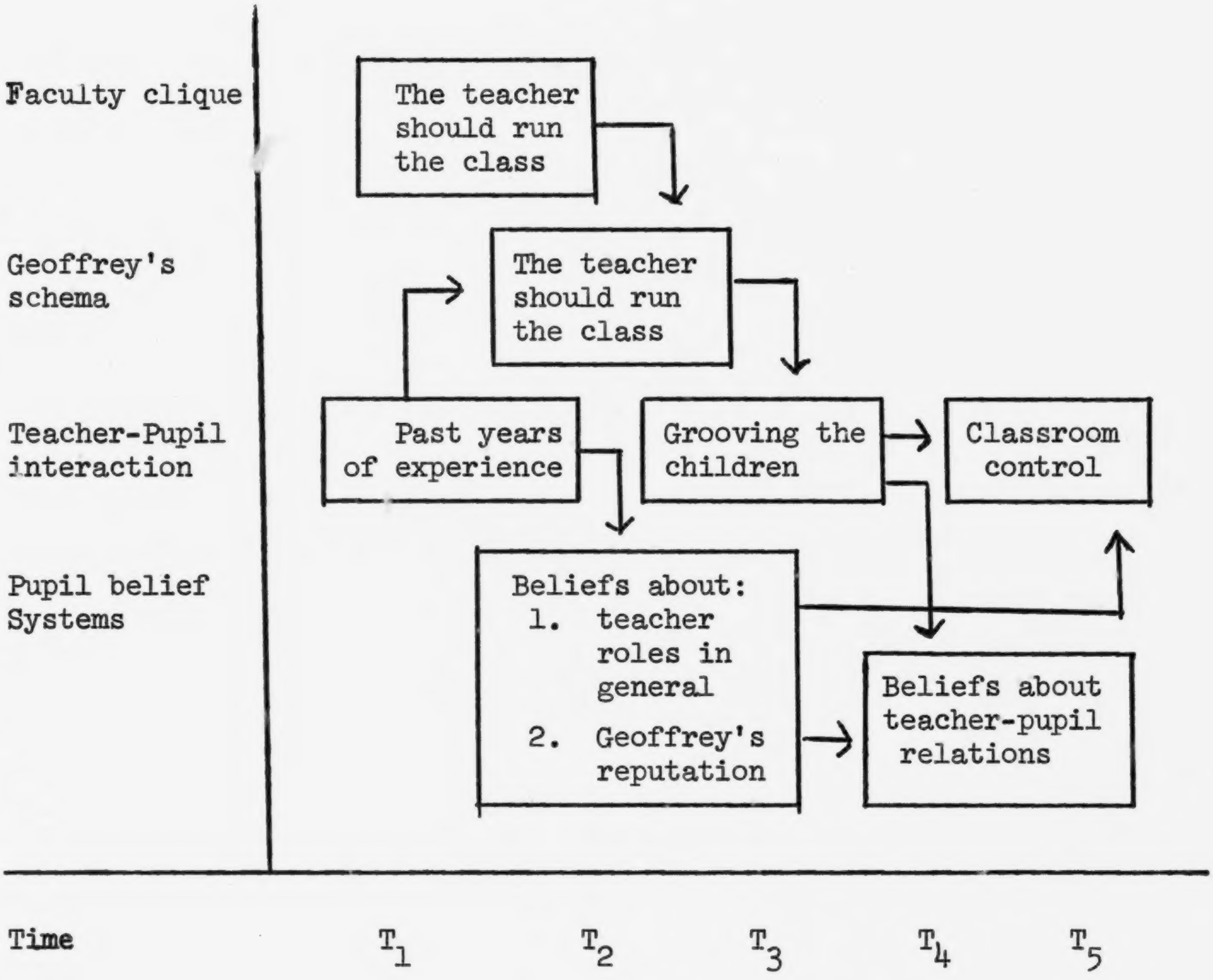
Faculty clique
Geoffrey's schema
Teacher-Pupil interaction
Pupil belief Systems
The teacher should run the class
The teacher should run the class
Past years of experience
Grooving the children
Classroom control
Beliefs about:
1. teacher roles in general
2. Geoffrey's reputation
Beliefs about teacher-pupil relations
Time
T_1
T_2
T_3
T_4
T_5

Figure 4. A model for analysis of initial steps in classroom control.

In a way, the simple behavior of Eileen's walking to the board carries considerable import for the classroom system:

> Few questions about letters. Sarah asks about "trachery," Geoffrey sends Eileen up to correct and to make it "treachery." (LMS--This seems very critical also. Without fanfare Geoffrey always sends the erring one back to correct his or her own mistakes. Implicit rule--if you don't do it right you'll do it again. Expand and interrelate.)(9/10)

A similar situation occurs with Sam. At approximately 11:25 during a language arts lesson:

> "How many are through? Those who are please wait patiently and quietly. Sam!" Geoffrey walks around the room, gives Allison a look. Stops to talk to Sam. (Can't pick up conversation except some about staying busy, book report. Sam protests that he has finished and is ready to give report.) Discussion--not quite banter--occurs between Geoffrey and Sam. (9/10)

Three minutes later:

> "Sam! All right, that's enough. Turn around. All the way." He does. (9/10)

Two minutes later Sam volunteers to go to the board and work a problem. Geoffrey lets him. Later, as we will see, Geoffrey is not averse to putting further punitive teeth into his demands. The occasions for that kind of behavior are important for our analysis.

The Shift from Beliefs to Norms: Softening the Tone of Classroom Management. If our analysis is correct, that is, that norms must be distinguished from beliefs, and that the distinction involves the incorporation of sentiment into the belief, then we can talk about "acceptance of belief" as equivalent to the concept of norms. Part of the teacher's task is not only to have the pupils know what they "should" do but to be "willing" to do it. In Geoffrey's class, humor seemed to be a major dimension of his performance that carried these implications. Late one afternoon, he received a memorandum from the office regarding some insurance forms to be taken home. In the course of the discussion the following notes were made:

> "Let me have your attention. I have some material for you." Raises accident insurance materials. Indicates parents are to make decisions about materials and not the kids. "Don't mutilate. Stop work and listen. Know what I have done on occasions with someone who wouldn't stop working? Don't guess. Ask someone who knows me."

Geoffrey goes through insurance form carefully. (9/10)

A similar illustration, which we have already used, applies to "softening the tone of classroom management." It indicates Geoffrey's concern for establishing not only a belief but a norm as well. Many times he seemed to feel the need to make rules and regulations clear. He often did this dramatically. However, when his point was made, he usually softened the criticism and maintained the task-oriented quality of the group through drama, humor, and incidental learning. The records are replete with illustrations of this sort, and the incident with Susan and the sunflower seeds typifies them.

In our framework a belief is a generalized perception of what exists, while a norm is a generalized or group expectation of what ought to exist. As Geoffrey made the class rules clear, he was dealing with belief systems; as he tried to build an emotional commitment on the part of the children to these beliefs, he was engaged in the more complex task of shaping normative structure.

Additional Aspects

While the concepts of interdependence, teacher decision making, and initial teacher roles are very critical, and we have tried to clarify them in some detail, a number of additional aspects of classroom social systems need to be mentioned briefly, if not indicated in detail. The further aspects of teacher-pupil interaction include such important ideas as awareness, continuity, banter, and drama. The social structure of the pupil world can be discussed as conceptually independent of the teacher, even though he is a major figure in its actual determination. We are convinced of the potency of such concepts as "pupil roles" and see such important ones as monitor roles, sex roles, and individual roles. The latter would include phenomena as "court jester" (see Smith & Geoffrey, 1968, pp. 54-58), "non-worker: troubled and troublesome," and "on contract." The sentiment structure (acceptance and rejection) and the subgroup interaction structure are important conceptions as well. The concern about "lessons" leads us into considerable analysis toward a conception of activity structures.

In conclusion, our conceptual stance of the classroom as a social system is reflected most completely in two volumes. The Human Group and The Complexities of an Urban Classroom. It is impossible to indicate briefly and adequately here the breadth and depth of the position taken in those discussions.

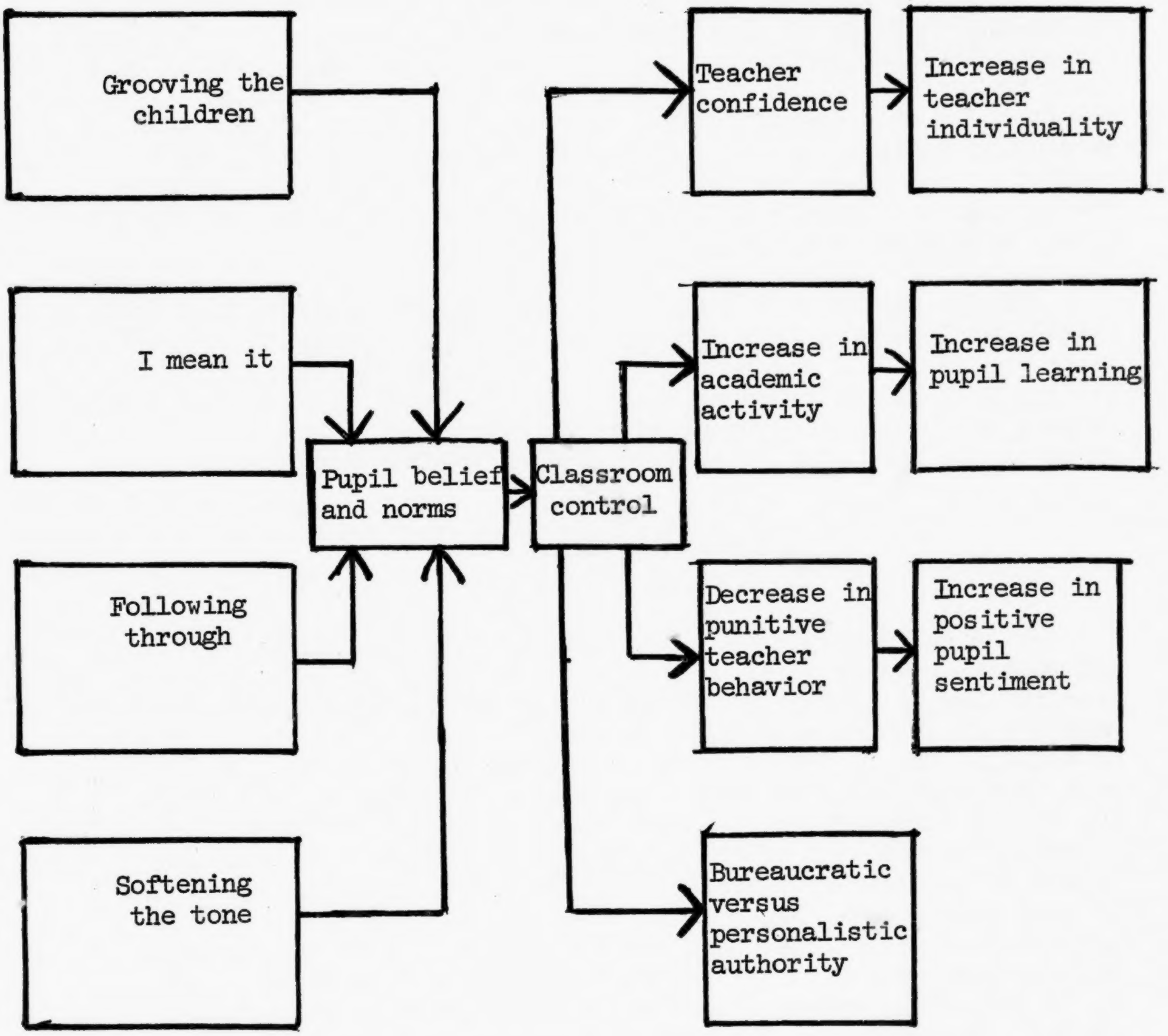
Grooving the children
I mean it
Following through
Softening the tone
Pupil belief and norms
Classroom control
Teacher confidence
Increase in teacher individuality
Increase in academic activity
Increase in pupil learning
Decrease in punitive teacher behavior
Increase in positive pupil sentiment
Bureaucratic versus personalistic authority

Figure 5 Summary conceptualization of antecedents and consequences of classroom control.

THE PRESERVICE TRAINING PROBELM[11]

Introduction

We have considered in great detail several of the intellectual threads of the conceptual position, the classroom as a social system. In great brevity, we have indicated further necessary aspects of the position. At this point our purpose moves into issues in teacher training relevant to the social system stance. Specifically, we will work toward a context which we call "phase and emphases in developing a professional teacher." In route toward that goal, we will raise aspects of the special problems of the preservice teacher and several programmatic tasks which focus specifically on the interdependencies of the social system position and the characteristics of the individuals in the preservice program. In much less detail, because of time and space limitations, we will speak to the issues of inservice training which have their own exciting quality.

The Special Problems of the Preservice Trainee

Concrete Perceptual Images

Several interconnected major problems face the preservice teacher. Much of the dissatisfaction often attributed to teacher education seems to occur because the major efforts of teacher trainers focus elsewhere than on these problems. First, most preservice teachers have very limited perceptual backgrounds and images of classroom life--especially as these images occur from the position of teacher. Attempts to talk and theorize about classroom events without building such images are fruitless. This point arose vividly in our apprenticeship study (Connor & Smith, 1967).

The "2 x 2" program had a number of latent consequences which were not anticipated by our inductive approach to the program. The concrete perceptual images dimension arose from an early observation of one of the apprentices' logs and from a conversation with a principal. The field notes stated it this way.

> To this point I've made arrangements to see two of the apprentices at City Teachers College on Firday morning. They seem most willing and cooperative in this endeavor. Both of those that I've had a chance to talk to and make such arrangements have also carried out several of the daily writing assignments. As I scan briefly a couple of Miss Frank's it is very

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[11] This section draws heavily upon the discussion in Connor & Smith (1967) and upon conversations with faculty colleagues at Washington University.

> interesting the mundane kind of percepts that are getting built. One of them, for instance, centers around the frequency of the kids crying and the advice of the teachers not to pay any attention to it or otherwise you'll have a whole lot of it. How we will eventually categorize and organize these remains a very interesting kind of question. (9/16)

Our notes are replete with the filling in of the vague, the general, the abstract with the specific, the particular, and the concrete. Our apprentices absorbed these details as does the proverbial sponge.

> The Principal used also the word "smattering" to describe the City program. Apparently she has some questions about what is accomplished more long-term wise in this short "2 x 2" program. Part of the argument we might make here concerns the state of the apprentice and what might and should be learned. The high number of varying raw perceptions that are created as you go through the whole school in various styles may be most appropriate as a sort of "background experience" with the necessity of the long-term apprenticeship coming later. It could be argued that the longer term experience would then be handled in something more like a paid internship. Similarly, it might be argued that the "2 x 2" experience could well be in the form of a teacher's aide. You do what you can and you pick up what you can and in between that experience, or concurrent with it, you take the related courses in the theory or pedagogy. (9/21)

Presumably ways of measuring such experiences could be evolved, and if one decided the experience was important, then ways could be developed to phase apprentices through the total process.

In the October field notes (Connor & Smith, 1967) items with a sensational dimension appeared as the apprentices traded stories:

> It's now 11:10 and I'm on my way back from my usual Friday morning meeting with the four apprentices. They are all full of vitality and excitement about what they are doing and what they are learning and the experiences they are having.
>
> While I'm beginning to sound like a broken record, it seems to me that many of the ideas that we've generated about the importance of concrete images and the trying one's wings in the role of teacher, these seem to keep coming through very strongly. For instance, Miss Charles mentioned with some feeling of having missed an important event, the fact that one of the boys in her last class had a seizure this Monday, the morning after Miss Charles

had left the room. There was no question that she felt strong sympathy and feeling for the boy who has epilepsy; at the same time, this kind of unique new experience was one that the hadn't had and she wondered what one would do about the child to keep him from biting and swallowing his tongue, etc. Similarly, Miss Frank commented about the fact that she probably will get playground duty this next week, even though she's not supposed to have it. Some of this arose in the discussion with a young man, not part of the sample, who reported the same kind of "jungle" occurring at the north side Roosevelt School, wherein one kind stepped on another kid's fact. The apprentice had to break it up. The senior lounge is a haven for this kind of discussion on Friday mornings when the apprentices come in from the schools. (10/8)

Confidence and Anxiety

Most teacher trainees carry strong adient-avoidant motivations regarding their ability to carry out the day-to-day processes and skills of teaching a group of children. In the adient sense, the trainees want to try their hand at "making the animal behave." By this we mean they are eager to teach lessons in reading, arithmetic, and the other curricular areas and they are eager to test their abilities in what we have called the core interpersonal skills of teaching. On the avoidant side of the motivational coin, almost all are at least somewhat fearful that they will not succeed--at least as well as they would like--and some are extremely anxious about any success whatsoever. In this situation, extended discourse about teaching bores those who are essentially adient and frightens those who are essentially avoidant. With some trainees, the usual education course--be it methods, psychology, or foundations--does some of each. In our apprenticeship study, we accented what we called "the psychomotor analogy."

The psychomotor literature suggests that confidence in one's self is a most necessary ingredient in performance of a skill. As one "loses confidence," becomes anxious, the collapse of even well-practiced habits can occur. Similarly, the physical educator speaks of individuals and teams which are beaten before they start. Anxiety is an emotional reaction characterized by experiential components of discomfort, general malaise, inadequacy and dread of unknown consequences. Physiologically, the reactions include accelerated heart beat, perspiration, tremor, and muscular tenseness. Some people, and at least one of our apprentices seems to qualify in this regard, carry a good bit of this reaction with them all the time. Most people experience some of the reactions in new situations for which they have little available responses. This seemed to be true of almost all of our apprentices as they moved into teaching.

If we ask our data--Of what importance was confidence and anxiety in our apprentices?--we find several significant generalizations. First, our apprentices varied markedly in the place they found on this continuum. Second, it seemed linked tightly into complex configurations of variables--both theoretically and practically. Third, the "2 x 2" system seemed to present only a few possibilities for altering anxiety into confidence.

As we have already indicated, some persons carry with them what the psychiatrists call basic anxiety or free floating anxiety. As such, it is readily available to be attached, associated or conditioned to any aspect of the environment which somes along. In addition, we have alluded to the fact that the demands of any new and difficult task for which one does not have readily available and appropriate responses produce stress, frustration and generalized emotional reactions. In addition, the individual, as the educationists are prone to say, brings his total personality to the learning situation. Most specifically, he brings his good standing with his peer group. To maintain that standing, and peers means a society of equals, the individual must perform in that range of tolerable behavior which the norm defines as acceptable. The potency of this for the child with his gang or the adult with his social group is not to be scoffed at nor denied by disparaging references to fallacies in "other-directness" or conformity. We all have our reference groups and even though one may be different from another and the other's group does not seem so important, one should not be misled. It is there and it is important. Without elaborating, one's family--parents, siblings, spouse, etc.--provide for most learners an significant reference group, and for our argument here, a source of anxiety if one does not attain to the degree the group defines as adequate.

Phrased more positively, confidence spirals into permitting one to try the unusual, the novel or the difficult. It gives a clarity to one's action and a flair to one's performance. It has a self-fulfilling quality about itself. These factors lead to success and to increments in confidence. We have diagrammed these relationships as Figure 6.

The teacher-pupil relationship literature is cluttered with emotional appeals for the need of warmth and pupil centeredness. The essence of this, as we look at the psychomotor phenomenon, is that failure and unsuccessful trails are going to occur. The child misses the ball with the bat and strikes out or a ball is hit and dropped in the field. He does not need someone to tell him he erred or to harangue him for erring. All that is very clear. In our judgment, what the child needs is someone to be there, to support him and to localize the issue to that time and place and that particular skill and episode. The key issue reflects the demand that the failure and lack of success does not generalize to the total activity and precipitate the child's quitting, or engaging in any one of a variety of defense mechanisms,

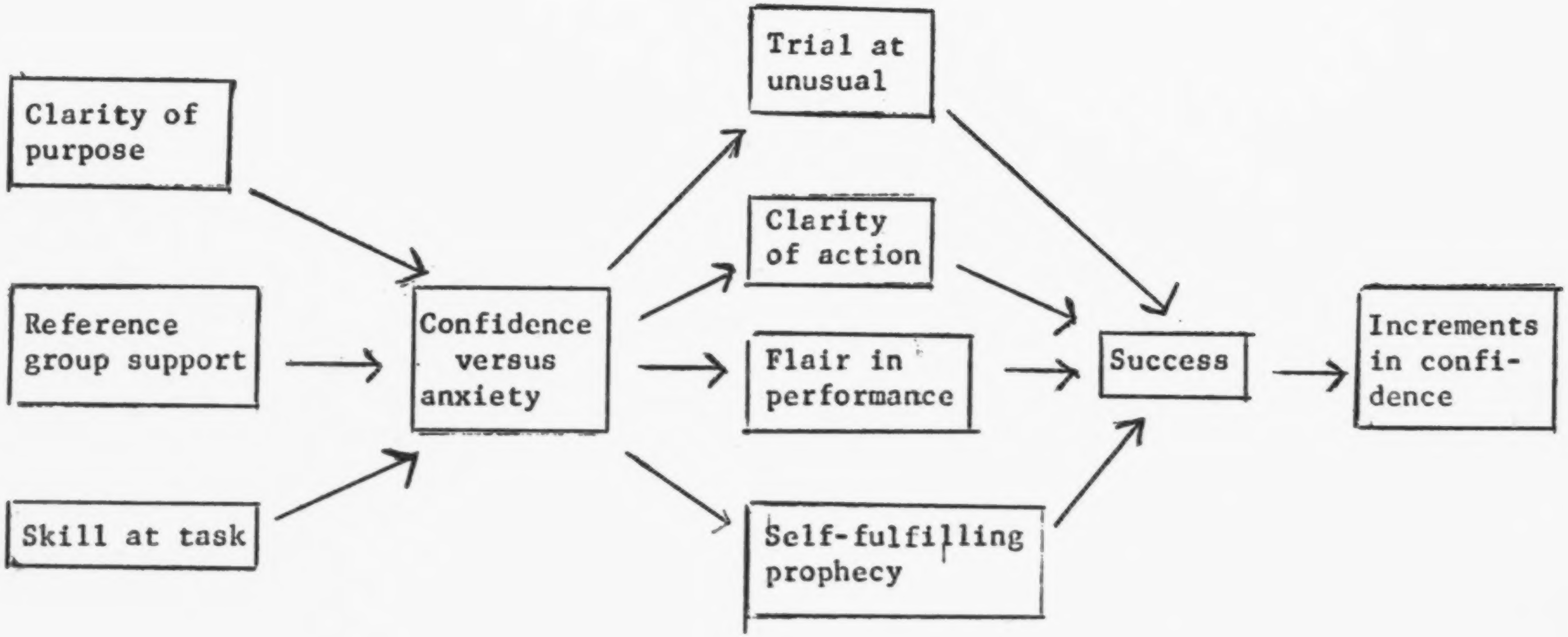
Clarity of purpose
Reference group support
Skill at task
Confidence versus anxiety
Trial at unusual
Clarity of action
Flair in performance
Self-fulfilling prophecy
Success
Increments in confidence

Figure 6 Antecedents and consequences of "confidence" in teaching.

e.g., "She's a lousy teacher," or "She yells at us," or "Who cares?" It is in this sense, the pervasiveness of anxiety, fear and negative emotions, that the principle of warmth and supportiveness becomes very apparent. We, as accepting observers outside the authority structure of the program, found ourselves playing a major and unanticipated role in the lives of the apprentices. The cooperating teachers, supervisors, and principals played similar roles in varying degrees; they often were hampered by status differentials and evaluation responsibilities. Ultimately training programs must recognize these dimensions of the system and build mechanisms to alter the more debilitating consequences.

Need and Desire for Skills

Our experience has been that productive thinking in a field often proceeds through the use of analogies. By this we mean that the knotty problems in one area often are unraveled a bit by using concepts and modes of approach from more highly developed field. As we observed our apprentices, we were impressed with what looked like the development and learning of a skill. Hypothetically, if one poses the problem of teaching as a skill, then the literature and mode of approach from the skill learning area might provide a fruitful way of exploring what it means to learn to teach. The first meeting we attended reintegrated earlier and related ideas on such a possibility. The field notes relate this early reaction.

> The supervisor has an elaborately worked out document which she passes out to each apprentice. This includes the schedules, three forms, and a variety of general advice. There are long lists of do's and don't's. She picked out and highlighted a few of these. Some of them as mundane as handwriting, penmanship and talking to the class rather than to the chalk board. One of my major impressions here was the notion that teaching is really a craft or a trade and that the apprenticeship is a very relevant word. All of this carries overtones of Dan Lortie's analysis of teaching as sub-professional, a craft. Another way of putting the issue is that teaching is considered a complex, psychological, social, and psychomotor skill. As in many skills, there are a whole variety of very small, mundane things that one has to do, to coordinate, and to attend to if one is to do it correctly. Within this same analogue there seems also to be a pretty clear criterion statement of performance. In a sense, I would guess that the cooperating teacher and City School District have a pretty clear idea of what it considers to be good teaching. Whether this image relates significantly to any or all kinds of pupil learning is an open question. In some sense, however, from

> the teachers' and the apprentices' points of view it's an irrelevant question. One of the issues that seems to me to be a good problem at this point is the characterization of this image of "the good teacher." (9/14)

On occasion, as one observes in a naturalistic setting, the seed of an idea arises which has the potential of providing a framework or theses for ordering a series of phenomena. This occurred in the analogy of teaching as a psychomotor skill during the apprenticeship study. While the notes contained a few precursors, the idea bloomed most dramatically late in September. The field notes summarizing an hour with Miss Charles, one of the apprentices, carry the idea.

> As this discussion went on I was struck by the analogy of teaching and psychomotor skills. This, it seems to me, is a very good lead and one that warrants considerable attention. As the cooperating teacher was describing the way things went, there were overtones of sequencing, coordination, perception of minimal cues, of behaving in kind of an intuitive free and easy style with much less of a cognitive component. I am reminded here of John E. Anderson's old comment that once you get a psychomotor skill, such as a well-learned gold swing, then you don't want to think about it at all. You just want to do it. This was very heavily the kind of thing that the cooperating teacher was saying about teaching. Specifically, she thought Miss Charles wrote very beautiful lesson plans but was perhaps too fixated, and that's my word, on the plan so that she couldn't move easily and improvise as other situations arose. She was most clear in stating that you had to have an idea of what you wanted to do and where you wanted to go and have that clearly in mind, but that you shouldn't be bound to it. She had a good bit of difficulty putting this into words as she tried to say it. Another illustration that she gave concerned the break between each lesson and the fact that they should "melt," and that was her word, together. In her words also, some of this would "come with practice." In short, a good bit of this ties in with the notion of teaching as a craft or a skilled trade or an artistic performance.
>
> Another concept that came up repeatedly was that of "losing the pupils." This was in reference to a long reading lesson, approximately 45 minutes, which Miss Charles taught. The cooperating teacher was willing to entertain the reasons that the lesson was so long, and Miss Charles had really very few except that she wanted to finish one section and hadn't really noticed how long it

> was taking. At the same time, she commented that part of teaching is knowing when to stop and the "losing them" perception is one of those times. She indicated also that it is important to have "something tucked away" that the teacher can move into in such circumstances.
>
> Around the "losing them" phenomenon were further images of the artistry and the notion of teaching as a skill.
>
> Another comment that the cooperating teacher made concerned the "lack of confidence" and fearfulness which she thought Miss Charles had. Again, she saw this as perfectly normal and one of the things that apprentices have to get over. This sort of inhibition continually gets in the way of the smooth performance of any kind of sequenced skill. This also seems to be a part of the cooperating teacher's general position on the development of apprentices. She sees these issues as a series of problems that the apprentice must face and must work with and that over a period of time, and what she would describe as the normal processes of learning, one comes to overcome. She, herself, doesn't seem much agitated or much in a rush for the problems to be mastered for once and for all, but rather she acts much like some of the child development people when they talk about a young child gradually maturing and coming to take his place as a well socialized being in the group. She would fit, I think, quite nicely as an illustration of Stephen's conception of spontaneous schooling as this might apply to the learning problems of the apprentice. (9/29)

In short, our field notes and interpretations suggest a number of implications conerning the "performance" dimensions of teacher training.

The Microethnography of the Classroom: an Approach to the Image Problem[12]

Perhaps we are committing the error of the cultist who perceives his own limited perspective to be the panacea which will solve all problems, but our own teaching experience -- not our research -- suggests that preservice students become highly involved both motivationally and cognitively in becoming "microethnographers."

Initially we had tried having teachers make a brief observation of an elementary or secondary classroom as a prelude to discussions in educational psychology. More recently we have elevated such a task to a major focus in the program. Roughly, the trainee spends four or five clock hours over several consecutive days in the classroom. During his stay he collects careful field notes of the events of each hour. His primary purposes are to produce a description of the classroom in what we have called the everyday or "lay" language and to produce an initial set of concepts and hypotheses which will help him explain what he has seen. While this sounds simple, it can be extraordinarily difficult and challenging to trainees of varying abilities, backgrounds and interests.

To facilitate independent work on such an observational project, we have concurrently described and analyzed in detail some of our own experiences as they have been reported in Smith and Geoffrey (1968), especially Chapter One and the Appendix. We raise our conception of theoretical models and a variety of suggestions for making the approach productive. The major aspect of our model building is to urge upon our trainees the need to focus upon antecedents and consequences. In part, this is an elaboration of such widely accepted general positions as searching for causes and the multible causation of educational and psychological events. The concern for consequences has been a much less accented point of view in educational psychology (in contrast to sociological functionalism). Finally, we have urged our students to present their ideas figuratively, in diagrams, much like those presented earlier in this report. The ability to scan a system this way seems most helpful in making meaningful the more linear prose.

Several interrelated phenomena seem to be critical if one is to find microethnography a productive approach for classroom analysis. Lying behind the deceptively simple appearance of the method, the several conditions we have found to be important are (1) foreshadowed problems; (2) an attentive ear; (3) interpretive asides; (4) vivid and concrete data. Briefly these may be phrased in the following fashion.

Foreshadowed Problems

Foreshadowed problems are those knotty questions, the toughest ones you can find which you keep asking the data to answer. In his monograph, Argonauts of the Western Pacific, Malinowski (1922) states his perception of the issue:

> The Ethnographer has not only to spread his nets

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[12] These materials draw heavily upon Smith (1967)

> in the right place, and wait for what will fall into them. He must be an active huntsman, and drive his quarry into them and follow it up to its most inaccessible lairs. And that leads to the more active methods of pursuing ethnographic evidence. . . . The Ethnographer has to be inspired by the knowledge of the most modern results of scientific study, by its principles and aims. I shall not enlarge upon this subject, except by way of one remark, to avoid the possibility of misunderstanding. Good training in theory, and acquaintance with its latest results, is not identical with being burdened with 'preconceived ideas.' If a man sets out on an expedition, determined to prove certain hypotheses, if he is incapable of changing his views constantly and casting them off ungrudgingly under the pressure of evidence, needless to say his work will be worthless. But the more problems he brings with him into the field, the more he is in the habit of moulding his theories according to facts, and of seeing facts in their bearing upon theory, the better he is equipped for the work. Preconceived ideas are pernicious in any scientific work, but foreshadowed problems are the main endowment of a scientific thinker, and these problems are first revealed to the observer by his theoretical studies. (pp. 8-9)

The central thrust of the "foreshadowed problem" is that it selectively guides one's perception and thought while one is in the field. For instance, in our Washington School Study (Smith & Geoffrey, 1968) I was continuously asking myself, "How does one manage them? How do you get them to listen to you? What's it like to be in the class hour after hour, day after day? What are the satisfactions and the frustrations?" As these questions keep turning over and over in one's thoughts one is continually jotting down the concrete overt behavior of the teacher and children. "Who said what? Who is where? Who is moving about, talking, playing, reading, and so forth?" Such foreshadowed problems, whether cast in lay language or in more abstract formulations, are different from having preconceived ideas or solutions. The "preconceived ideas," in one instance, were cast as a standing joke between Geoffrey and me. When he was faced with difficult choices he would ask, with a twinkle in his eye, "How does the 'good teacher' handle?" or "What does Education 101, The Principles of Teaching, say about that?"

The Attentive Ear

As one has unanswered questions lying in the novel setting which one is observing, it seems to create a listening set in the observer, an attentive ear. Not only as one observes the processes of interaction but while talking with the persons involved in the organization, one asks them in a myriad of ways to "tell me what it's really like down here." We have found that the attentive ear is a major reinforcer to participants. It is also a gold mine for "classical solutions" to one's foreshadowed problems. And even more critically, the attentive ear elicits new definitions of those problems as well as many more problems worthy of being foreshadowed but which the field has not begun to analyze. These may be serendipic or latent and unanticipated, to use the "good" words of the field. For instance, an upper-grade teacher, one of the most gracious women I've ever met, told me about the difficulties she had in learning to live in a slum school. She related the disbelief held by her physician that one so gentle and shy as she could handle a group of youngsters with reputations such as those at the Washington School. On one occasion, a time of serious crises in the school, we observed her discipline a big, rough 15-year-old who was six inches taller and 50 pounds heavier than she. She verbally went through him like a flame-throwing tank. From such incidents we are developing testable conceptualizations for issues in personality theory which will handle the integration of such divergent components of self, social conceptions to describe the settings when such behavior is "necessary," and the degree to which the latter is a norm or a rationalization within the faculty group. These issues also provide a starting point for involved discussions of teaching.

The Interpretive Asides

As we observed we found that aspects of our foreshadowed problems kept arising as insights, guesses, and hunches. We tried to jot these, in parentheses, into the notes. These turned out to be invaluable points of departure, key concepts which later were to carry a heavy burden in the analysis. For instance, we have puzzled for some time over aspects of teacher directiveness and indirectiveness, the Anderson, Withall and Flanders tradition, and we had been asking ourselves, "How does this fit in the Washington School?" Our notes contained an episode surrounding Geoffrey's setting up a recess coffee table for the teachers. Quoting from the notes:

> Billy and Edwin bring in a table . . . Geoffrey tells Sandy to move assignment board sometime during the day -- to accomodate the coffee table. Looks for a coffee monitor . . . No volunteers. Geoffrey comments: "Don't everyone volunteer at once." Oliver suggests that Mr. Geoffrey volunteer. Geoffrey goes along moving materials. He does not push, ask, or plead.
> (LMS -- This seems very significant. Pick up later in the notes as to how it works out. This is part of his aloofness, powerfulness, or autonomy.)

Out of this came the hypotheses, which we now are trying to verify more generally: within a traditional self-contained classroom, teachers who solicit volunteers rather than direct pupils in those situations outside the commonly accepted province of the teacher's role qua instructor are held in higher esteem than those we do not. We are trying to pose problems to operationalize the direct versus indirect influence, trying to build measures of teacher esteem, and trying to ascertain situations that qualify as within and without the teacher's instructional role. The interpretive aside in the note helped us in our later conceptualizing the complex phenomenon of teacher-pupil interaction. It cues a series of relevant propositions.

Vivid and Concrete Data

One of the most fascinating aspects of the methodology has been the vividness and concreteness of the raw data. As one moves into problems at this level, beneath the glittering abstractions and the prescriptive generalizations so characteristic of education and psychology, we have a strong emotional reaction of being involved with a kind of "bed rock reality." While that may be true or false, the data have a hard quality which we have found most engaging and productive as we have tried to build back to more abstract formulations. The consistent attempt to stay away from prescriptive generalizations and to talk about antecedents and consequences has been aided by the flow of the data, the processes, and by the complexities of the problems as we have looked at the concreteness of this part of the world. For instance, during an early morning reading lesson on word analysis, the observer made the following notes:

> Geoffrey offers the general principle: syllabicate to help us read words we know in our speaking. Geoffrey presents "unmanliness." Asks Joe K. about the word; he's stuck. Has Harry analyze it into syllables, then has Joe K. pronounce it. He comes very close. Then enters into "manly" to get "like a man" and "un" as not. Through most of this Harry is most helpful. He knows root and prefix as conceptual labels. (LMS -- The trick here, in part, is using the able kids to start discussions and to use on rough and difficult points. As the others can respond (easier points, continuity, etc.) you call on them. If the lesson has appropriate difficulty level, you have got to tax the average student and gradually extend him to be differentiated and shaped. The responses of able kids serve as prompts to less able; start the processes and permit reinforcement. This is pertinent to group structure, its development and its use. (10/21)

In short, grappling with the concrete has seemed most provocative, for it gives the general issues a flint-like response. One cannot conceptually slip and slide about so easily when one translates into who said what to whom, in a particular sequence, and in a known context. Trainees find this to be exciting when it is their images, ideas, and conceptualizations which are up for analysis.

In short, the problem of concrete perceptual images about classroom systems -- teachers, pupils, activities, interactions -- receives strong emphasis in this kind of training task. Further, the student is impressed immediately with theoretical problems, that is, the need for a clear, consistent, fruitful language to utilize in analyzing his own data and in communicating with his fellows who have not observed the same episodes. Putting the responsibility upon the student to construct his own models, congruent with his data and his reading, seems appropriate also in the climate of our undergraduate times in which high student involvement is the *sine qua non* of instruction.

The Educational Psychological Laboratory: Elaborating Images and Ideas

In moving from initial images and ideas of the classroom as a social system to further refine and extend them we have aspirations toward setting up an Educational Psychology Laboratory; since time and financing have not enabled us to institute this aspect, our comments in this section will be brief and speculative. The core of the idea is to make a second part of the educational psychology and principles of teaching block of work into an experimental laboratory experience.[13] Social psychology has moved in recent years to more and more sophistication in laboratory experimentation. Aspects of this work can be introduced into the teacher training program. To this point we have utilized materials in classroom exercises but not to the desired point of actual experimentation by the students.

Ideally, as concepts and hypotheses are generated from the microethnography activities, the trainees would extend their knowledge by trying to examine their positions in laboratory experiments and to emulate the mode of inquiry of the laboratory psychologist. For instance, considerable interest among students exists in teacher styles and classroom discussions. As class experiments we have replicated a number of N. R. F. Maier's multible role playing experiments (Maier & Solem, 1956; Maier, Solem, & Maier, 1957) in which techniques for handling minority opinions, developmental discussions, and creative solutions were central issues.[14] Involving students in designing and carrying out simple experiments as part of their training program will hopefully make some of their reading less an exercise of verbalisms and more a meaningful way of extending images and ideas about classroom social systems.[15]

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[13] In contrast to the naturalistic laboratory of the ongoing classroom described in the microethnography discussion.

[14] Similarly, Luchins' (1957) work on first impressions has been a provocative class experiment for another set of issues.

[15] The fruitfulness of this in discussion of children's learning and intellectual development seems even more impressive.

Simulation of Classrooms

Another major technique which we see as important in developing an understanding of classroom processes with teacher trainees is through complex simulation activities. Our particular intent, and once again we have not implemented the approach, accents the decision making skills of the teacher trainee. The format seems exceedingly important for developing sophistication in making the student aware of multiple consequences of action and in moving many issues from the "latent and unanticipated" category to that of manifest and manageable.

Our interest in this part of the training sequence also grows out of the data which we have accumulated in our research. For instance, our long sojourn at the Washington School (Smith & Geoffrey, 1968) left us with a richness of specific detail and a breadth of events in the classroom, the school, and the district from which we could build real problems with real and reasonable alternatives and their consequences that would prove difficult and interesting to the most sophisticated trainees. Further, it would permit the sequencing and development of alternative structures which would extend over the several months of the semester. For instance, the attention that is paid to careful records would have implications for the grading one does, for the occasional visits by central office supervisors, and for interviews with hostile parents. Each of these consequences would intertwine with the social roles pupils play in the class, the classroom authority structure, control, the faculty social structure and one's position in it, and ultimately the learning, promotion, and retention of individual children.

The momentary resolutions but ultimate cul-de-sacs, the momentary unpleasantness but long-term resolutions, and so forth, seemingly could be programmed so well that a wiser and more rational teacher could be developed in the preservice period. As one teacher expressed it, these are the kinds of things one usually finds out painfully by experience. With the advances being made in computer technology the exercises could well be instrumented in the form of computer assisted instruction. The problems existing in implementation are those of time, money and technical knowledge, all of which can be resolved.

In summary, the technique -- simulation -- relates to a fundamental conception -- decision making -- in the social system model. At the same time, it has a practical cast to it. This blending of theory and specific training tasks toward relevant goals seems to be a much needed integration in conceptualizations of teacher training programs.

Micro-teaching: Skills Based upon Confidence and Decisions

The reports emanating from the Stanford University program on micro-teaching suggest that the technique of building micro-experiences into teaching is quite fruitful (Allen et al., 1967). Micro in this sense means limited purposes, limited time and limited class size. I have had no personal experience with the technique, but find it theoretically very compatible with our analysis of teacher decision making, with the issues of confidence and anxiety in apprentices and with the conception of skill components in teaching.

The major weakness in the approach at this point seems to lie in the kinds of skills upon which the micro-lessons focus. From our analyses (Smith & Geoffrey, 1968; Smith & Keith, 1967; Smith & Brock, 1968; Connor & Smith, 1967) we think we have developed ideas susceptible to micro-teaching, but which have higher potency as variables within the classroom as a social system. We are in the process of trying to build situations involving ringmastership, continuity, drama, personalized interaction, and so forth.

Further, a possible sequencing of tasks which we intend to try next year involves first, the intensive microethnography experience. Each trainee then selects from his conceptual analysis an important teaching skill which he then develops into a micro-teaching lesson. The usual possibilities of video taping, discussion with instructors and classmates, and reteaching would be integrated. If the idea remains important and the trainee is so inclined, further exploration could be made in the experimental educational psychology laboratory . Or, the trainee could move into specially selected sequences of the total battery of micro-teaching problems on file in the training program library. Obvious advantages occur in furthering general objectives of inquiry about teaching, images of the teaching process and skill and confidence in teaching. Opening several options seems a most important aspect of dealing with the varying interests and abilities of the trainees. Again, we have not yet tried to implement such a program; at the speculative stage it seems very intriguing.

A Modified "Two by Two" Apprenticeship

As our analysis has progressed we have been concerned with a social system stance in teaching and with a total training program which develops, at least hypothetically, the teacher into the kind of person to carry out successfully the task demanded. In recent years, as on many occasions in the past, these issues are not only in debate among teachers, teacher educators and members of the more general establishment, but also within the general public.

It has long been recognized, in the field of teacher education, that the practice teaching or clinical aspect is crucial. In fact, historically, the methods of teaching, observation and demonstration, and practice in teaching have been the most dominant elements of the preparation for teaching. The practice in teaching has occurred under a number of formats -- known variously as practice teaching, apprentice teaching and the internship. The last of these patterns is comparatively recent in origin, although some attempts were made as early as

1895, 1904, and 1919. However, it was in the 1930's that most of the internship programs were developed (Shaplin & Powell, 1964). In all instances the emphasis appears to be on "practice" in "realistic" situations with increasing responsibility being given to the student for the conduct of teaching. The nature of the organization pattern for "practice in teaching" does not necessarily tell us what is, or ought to be, the major focus of the experience. The format does not tell us what is to be learned; what kind of a teacher we wish to develop through time; what outcomes are to be desired concerning continued growth in teaching; what conceptions of teaching behavior and resulting pupil behavior are deemed to be desirable as a consequence of engaging in the "deliberate" education of the young. An answer to these latter queries may help us to give more nearly effective structure to the practice experience; it may aid us in defining the kinds of activities we wish practice teachers to engage in; and it may aid us in better defining the roles of the multible persons (and the interrelationship of roles) as they converge in the total educative process for pupils, student teachers, cooperating teachers, administrators, and college personnel concerned with both the clinical and theoretical aspects of the education of teachers and pupils in the schools.

The many advantages and limitations of the "2 x 2" apprenticeship have been recounted in Connor and Smith (1967). At this point, we will be concerned with only one aspect, the "nine trials" phenomenon. The reader will recall that the apprentices spent an intensive two weeks teaching each of nine grade levels, K-8, during his semester's practicum. One of the latent aspects of the "2 x 2" program is the ability to practice skills and apply generalizations since the apprentice has nine trials at new groups of children. One focus was on the problems of learning elements of discipline, especially setting up an authority structure, as we reflected on the experience of one of our apprentices, Greg Jennings. The field notes conveyed it this way:

> One of the morning-after residual impressions I have of Greg Jennings centers around the phenomenon of "discipline." He seemed to be saying to me . . . that the apprentice's problem was to work out a means whereby when he gave a verbal order, command, suggestion, or as he or a teacher would probably put it -- a simple direction, the pupils would follow it with a high degree of probability. Initially he seemed to operate on the assumption that if the kids liked him they would follow these orders. In the kindergarten he made it a point of individually getting to know, and be friendly with the kids. This didn't work. His move toward collectivity and toward firmness was his attempt to set up the intervening condition that would establish the authority structure. . . .
>
> An additional aspect of the "2 x 2" program is the experience that it provides not only as we were pointing out yesterday, with new groups to start on when you have

> difficulty with past groups, but it also provides an attempt to practice any growing generalizations and points of view such as this one. In effect, the apprentices get nine shots at trying to establish an authority structure. This is a tremendous amount of experience, literally nine year's worth, in contrast to the experience of apprentices from other programs. The potential kicker in this is that the "2 x 2" may force the individual, because of the brevity of the period of time the system operates, into very directive techniques which then will inhibit certain kinds of academic learning, particularly intellectual skills such as critical and creative thinking, and potentially some of the affective goals of self-discipline and group responsibility and consequently have some very negative long-run consequences. (9/23)

While we have illustrated the "2 x 2" program with data related to establishing an authority structure, a variety of other aspects grew out of our analysis. Briefly, as shown in Figure 7, we would indicate some of those points which integrate with the more general arguments in the present paper.

The possibilities of blending this kind of student teaching format with the more typical extended exposure to one teacher and one group of children have not been explored. Similarly, the phasing of ethnographic analysis and micro-teaching with this kind of student teaching has not been carried out. Such concepts are open to exciting verifying experiments across programs and institutions. Finally, a synthesis with the internship type program, which is in some vogue in professional education today, has not been carried out.

Conclusion

The preservice program regarding classroom social systems has been based on the conceptual elements within this theoretical domain and the special charactertistics which seem to typify many inexperienced teacher trainees. In the usual teacher training instruction sequences many of the tasks fall within the educational psychology and principles of teaching block of courses. That this should remain the format is not a necessary assumption in the present analysis. In fact, our growing belief is that the conservative forces of established professional disciplines, course definitions and descriptions, and hallowed textbooks represent major entrenched special interests with which the broader reformulation of teacher training must deal.

INSERVICE TEACHER TRAINING

Our intent has been to include an extended essay on problems of inservice teacher training in the social system area. Neither time nor space permits. Briefly, in outline fashion, several items have grown out of our experience at Washington University. Many of these have been made concrete in the form of a graduate course, "The Classroom as a

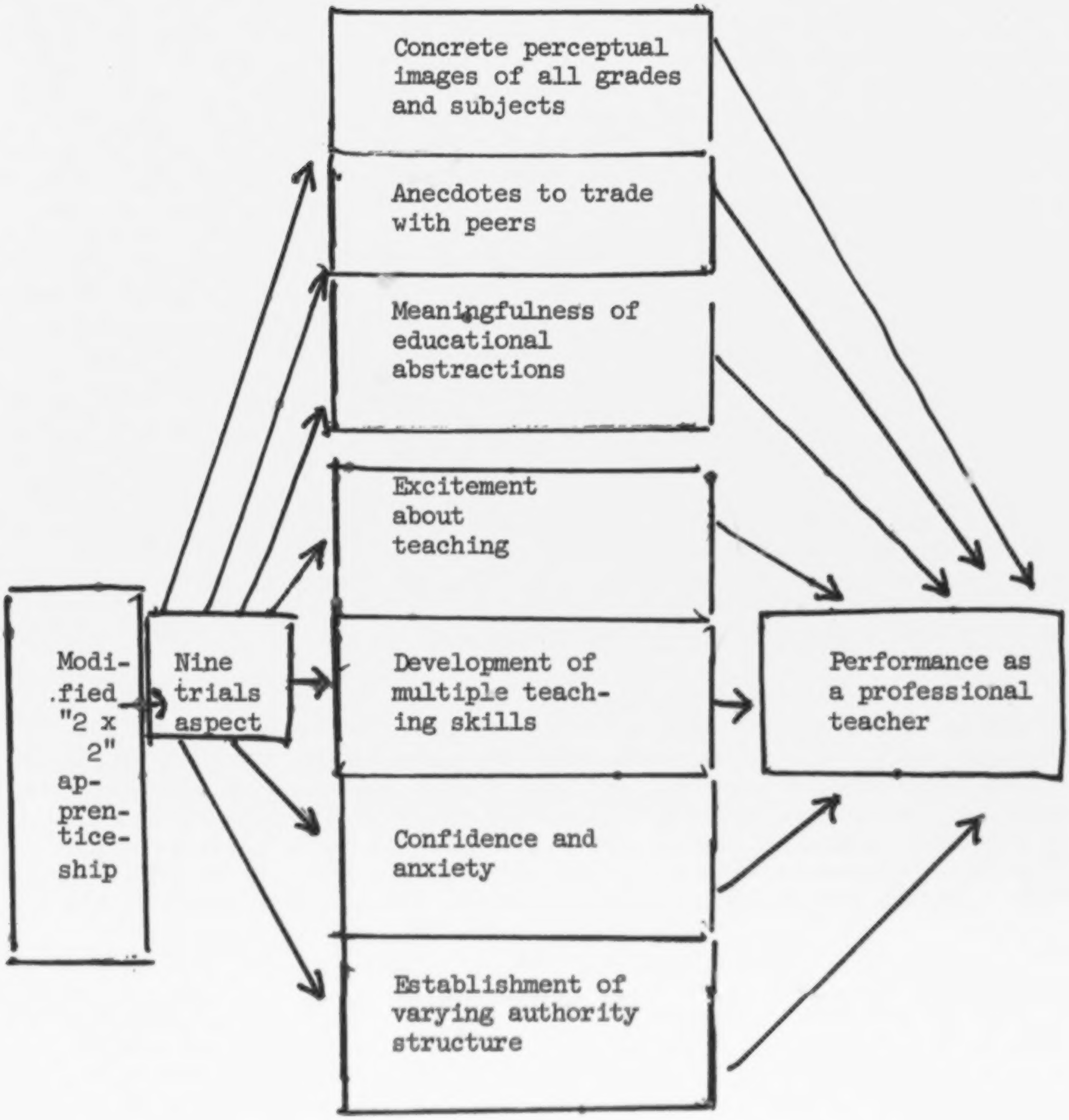
Modified "2 x 2" apprenticeship
Nine trials aspect
Concrete perceptual images of all grades and subjects
Anecdotes to trade with peers
Meaningfulness of educational abstractions
Excitement about teaching
Development of multiple teaching skills
Confidence and anxiety
Establishment of varying authority structure
Performance as a professional teacher

Figure 7 Aspects of the modified "two by two" apprenticeship

Social System," taught by the author for about six years.

The students have been M.A. and doctoral students in a variety of programs: educational psychology, elementary education, secondary education, and so forth.

The intellectual content of the course was developed along two interweaving strands, that of social psychology, and educational theory and research. The social psychological ideas were carried in part by two texts, Cartwright & Zander's *Group Dynamics* and Homans' *The Human Group*. These materials gave emphasis to the experimental verification tradition and to the model building field tradition. The educational ideas were developed out of general research in educational psychology and, more specifically, *The Complexities of an Urban Classroom.* In sum, the several sources provided a theoretical context to which we could continually refer.

The Homans' book provided the additional thrust of showing the teachers how to think in case study terms and how to move from the descriptive to the conceptual levels. This served as background for the major "applied" aspect of the course, the description and analysis of one's own class. To implement these aspects we devised a series of probes demanding that the teachers examine their own teaching and the setting in which the teaching occurred. Figure 8, "The environment of of the classroom," presents one such problem. This exercise carries the students into the heart of the "external system" concept and makes relevant and meaningful a host of illustrative material from the text (factories, boys' gangs, South Sea island life). It permits development of concepts of bureaucracy, social norms of the faculty, reference groups, and so forth.

Illustrative of the attempt to blend our own research into teaching are the probes in Figures 9 and 10. Earlier in this essay we described issues from Smith and Geoffrey (1968) regarding the establishment of the authority structure and the initiation of the activity structure. In the essays stimulated by "The first few days" we have very successfully brought forth an array of alternative approaches which can be analyzed, evaluated and synthesized. Parenthetically, it should be mentioned that one agreement between the course instructor and the experienced teachers in the class is that the content of the essays are confidential. The instructor does not raise any specific point or illustration in class discussion until it has been introduced first by the individual class member who reported it.[16] This understanding is made in the context of reporting what "teaching's really like" rather than what some text or ideology says

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[16] While it has not been stressed in this essay, the problems of anonymity and the keeping of confidence in field work, such as participant observation or microethnography of the classroom, are very important, and not to be underestimated nor ignored.

Figure 8. The environment of the classroom.

The unique dynamics and structure of a particular group are, in part, a function of the particular environment in which it resides. This is a basic principle which is often ignored by parents, teachers, and supervisory personnel. Homans (1950) uses the concept external system to help organize observations relevant to the principle. I would like you to develop an essay indicating your observations of the applications of this principle in your own setting. While there are many ways in which responses to this assignment may be organized, and I would hope you would respond as inventively and originally as possible, please attend to these points as a minimum: 1) the physical layout of the school building, 2) general system-wide school policy, 3) the principal of your school, 4) the group of teachers in your building, especially those who teach the same grade level as you and those immediately below and above you, and 5) the student body of the school.

Figure 9. The first few days.

Many teachers have commented to me, "The first few days of school are the most important, you've got to get off on the right foot." The explicit meaning attached to the proposition is generally not clear in the educational and psychological literature. Essentially, the intent of this paper is an analysis of what you think about this statement. I would like you to tell me in as practical and as specific a manner as possible how you stand on the issue. While you may organize your paper in any fashion you desire, I would like for you to comment at some point on 1) the goals you have for the first few days or weeks of school; 2) the plans you have for reaching the goals; 3) anything about the school where you teach or the children you teach which are special or important to keep in mind as you set your goals and plans; and 4) the specific aspects of the class which you keep alert to during this time which serve as cues for modifying plans or goals.

teaching ought to be. We have had no difficulty in maintaining such confidences nor in engendering productive class discussion. Most students find their peers accepting and respectful of diverse positions and interested in the "whys and wherefores" of these approaches.

The unique dynamics and structure of a particular group are, in part, a function of the particular environment in which it resides. This is a basic principle which is often ignored by parents, teachers, and supervisory personnel. Homans (1950) uses the concept external system to help organize observations relevant to the principle. I would like you to develop an essay indicating your observations of the applications of this principle in your own setting. While there are many ways in which responses to this assignment may be organized, and I would hope you would respond as inventively and originally as possible, please attend to these points as a minimum: 1) the physical layout of the school building, 2) general system-wide school policy, 3) the principal of your school, 4) the group of teachers in your building, especially those who teach the same grade level as you and those immediately below and above you, and 5) the student body of the school.

Implicitly illustrated in Figure 9 is another of our basic intellectual concerns, the decision making concept within the social system stance. Also the process elements and changes over time are implicit. The essay enables these issues to be raised with some force.

Figure 10 is a direct outgrowth of our research. In raising "the contract" for this kind of discussion we found wide-spread validation for the kind of analysis made in Smith & Geoffrey (1968, pp. 151-153).

One final illustration, Figure 11, The teacher's concept of power, is an attempt to reach several goals in helping teachers inquire about social systems. First, the essay stresses more careful definitions and the move toward more rigorous propositions. Zetterberg (1965) has been our model here. Second, the essay enabled us to move into a provocative discussion of the quite technical French & Ravens bases of power paper in Cartwright & Zander. Third, the focus is upon the teacher as an agent in the system utilizing concepts which have analytical power in molding the system.

In conclusion, most of the students (experienced teachers) find the inquiry emphasis stimulating. Most find the readings novel and new, with the consequence of high interest. The problems we pose for analysis of their own situations and experience are very time consuming as they become entranced with making the nuances clear and understandable. The several problems presented here are just a sample of several dozen on file from which we can select depending on the particular group and the kind of focus which grows

Figure 10. The contract.

Recently, in the course of observing several classrooms, I have noted that some teachers have established an informal contract with certain pupils. "If you don't bother me or the class, I won't bother you," describes the relationship. Essentially, the pupil attends class and does little or none of the assigned work; the teacher does not call on him nor get involved with him in any extended way. I am interested in your experience regarding such a relationship. Have you ever been involved in such a "contract" or have you known teachers in such a relationship? What consequences do you see for the pupil and the classroom as a unit? I would like you to describe in an much detail as possible such a phenomenon.

Figure 11. The teacher's concept of power.

Consider the following concepts and their definitions: 1) Psychological change is the alteration of an individual's behavior, opinions, goals, values, etc., or the alteration in the elements of a group or social system. 2) Influence is the process by which an individual or group brings about the change in another individual or group. 3) Power is the potential ability of one individual or group to influence another.

In the teacher-pupil relationship these concepts might be applied in this manner. Frequently teachers engage in altering--indirections they see as desirable--pupil cognitive behavior and pupil social behavior. To carry out such influence attempts requires power. Although I do not have data, it seems to me that a reasonable case can be made for these propositions: 1) Teachers vary in the amount of power they possess. 2) Teachers differ in their conceptions of the bases or sources of their power. 3) Teachers utilize different strategies to augment or increase their social power.

I would like you to write an essay making reference to 1) the relevance of the concept of power in teacher-pupil relationships; 2) your conception of your power as a teacher; 3) your conception of the sources of this power; 4) the strategies you have found successful and unsuccessful in increasing power in your particular situation(s) past or present; 5) other aspects of the problem which seem relevant to you.

out of the discussion. Such a reservoir permits capitalizing on the momentary issues and the uniqueness of any one group of students and prevents the instructor or class from getting bored with a routine set of exercises.[17]

While the experience seems to have been very successful in terms of student interest, conceptual development and analytical skills, that is, helping teachers inquire into social system dimensions of education, the major limitation lies in advanced skill training. For instance, we have not had a "teaching hospital" (Knowles, 1966 and Bolster, 1967) type of facility with children and technical equipment (such as video recording) available. To be able to move from some of the new concepts to their utilization in day-to-day activities would add a powerful increment to the experience.

Also, and at a more general level in teacher training, we have not invented a mechanism to maintain contact longer than one semester with the experienced teachers. The advantages of direct extended contact into new groups of children and new kinds of problems seems very important. As illustrations, both Geoffrey and Brock, with whom I've collaborated intensively over several years, were met originally in class. The benefits seem mutual and very great in both instances. A means of maintaining a contact similar in kind if not in intensity with larger numbers of students would seem very desirable. The usual university courses and degree programs have minimal flexibility in this regard.

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[17] It should be noted that building and teaching this course has been the author's most exciting teaching experience. The reader can discount the hyperbole and encomium.

GENERAL CONCLUSIONS[18]

Phases and Emphases in Developing a Professional Teacher

Various teacher educators have made comments, proposals and critiques relevant to some of the ideas presented in our analysis. For instance, in his monograph, The Professional Education of Teachers, Combs (1965) makes a telling comment as he criticizes the "competency" approach to developing a teacher education program. He states;

> ... it is a fallacy to assume that the method of the experts either can or should be taught directly to beginners. It is seldom that we can determine what should be done for the beginner by examining what the expert does well. (pp. 4-5)

In general, the implications of this specific point seem far reaching and underestimated in teacher education. In his comment regarding the "static affair" of teaching, Schaefer (1967) offers a different critique in the consideration of the competencies approach and suggests the inquiry model in the context of the long-range development of the professional teacher.

> If teaching is an essentially static affair, the various pedagogical skills required are best learned by apprenticeship under a master teacher. A particular preparing institution, if it wished to cater even further to the vocational motivations of its students, might also provide an orientation to the job through a historical or sociological look at the school as a social institution, a 'practical' review of human development and of learning principles, and a repertoire of techniques and procedures proved useful by experience.
>
> If, on the other hand, preservice teacher education is intended to provide a foundation for career-long development as an inquiring scholar-teacher, initial training must emphasize ways of knowing. There must be less concern for job information already discovered and far more interest in the strategies for acquiring new knowledge. Philosophy of education

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[18] These conclusions draw heavily upon Connor & Smith (1967), especially pages 278-282.

> would include epistomology and an introduction to the philosophy of science. Studies in psychology might furnish a working knowledge of research methodology and of experimental design, observational categories for observing and recording the behavior of children, and an introduction to the complex problems of measurement and evaluation. Courses in educational sociology would develop analytical tools for understanding student sub-cultures and the characteristics of pupils in a particular school. Courses in methods of teaching would eschew talk about techniques and procedures -- laboratory experience and apprenticeships would be relied upon to develop these skills -- and would focus upon the critical analysis of teaching behavior and a beginning approach to the logic of pedagogical strategies. In short, teacher education must seek to prepare teachers not as complete and polished practitioners but as beginning professionals who possess the trained capacity and the attitudes requisite to lifelong learning. (pp. 69-70)

Such thoughts as the above, our developing research, and our experience in teacher education have led us toward a process analysis--teaching training with a time dimension. This might be phrased as "phases and emphases in teacher training."

If a teaching career is spread over a time line and units struck off at the pre-practicum period, the apprenticeship, the first year of teaching, the probationary period and finally the long span of the professional career, it is possible to view teacher training in a larger context. If we trace across this time line a half dozen categories of events important to teaching, perhaps we can lay the groundwork for the richer analysis of teaching.

In Figure 12, the abscissa is the time line focusing on the college and career years. The ordinate represents the amount of emphasis, roughly gauged from low to high, of six threads within teacher training. The six threads are: 1) general liberal arts education and academic specialization; 2) concrete images of teaching; 3) core interpersonal survival skills; 4) idiosyncratic style of teaching; 5) analysis, conceptualization and inquiry about teaching; 6) nonclassroom roles in teaching.

More specifically we have engaged in little discussion of the liberal arts and substantive knowledge, strand one in Figure 12, in this paper. However, our belief is that the high school and first years of college must be devoted heavily to such training. This emphasis in the first few years drops off sharply at the time of the apprenticeship and presumably remains low through the probationary

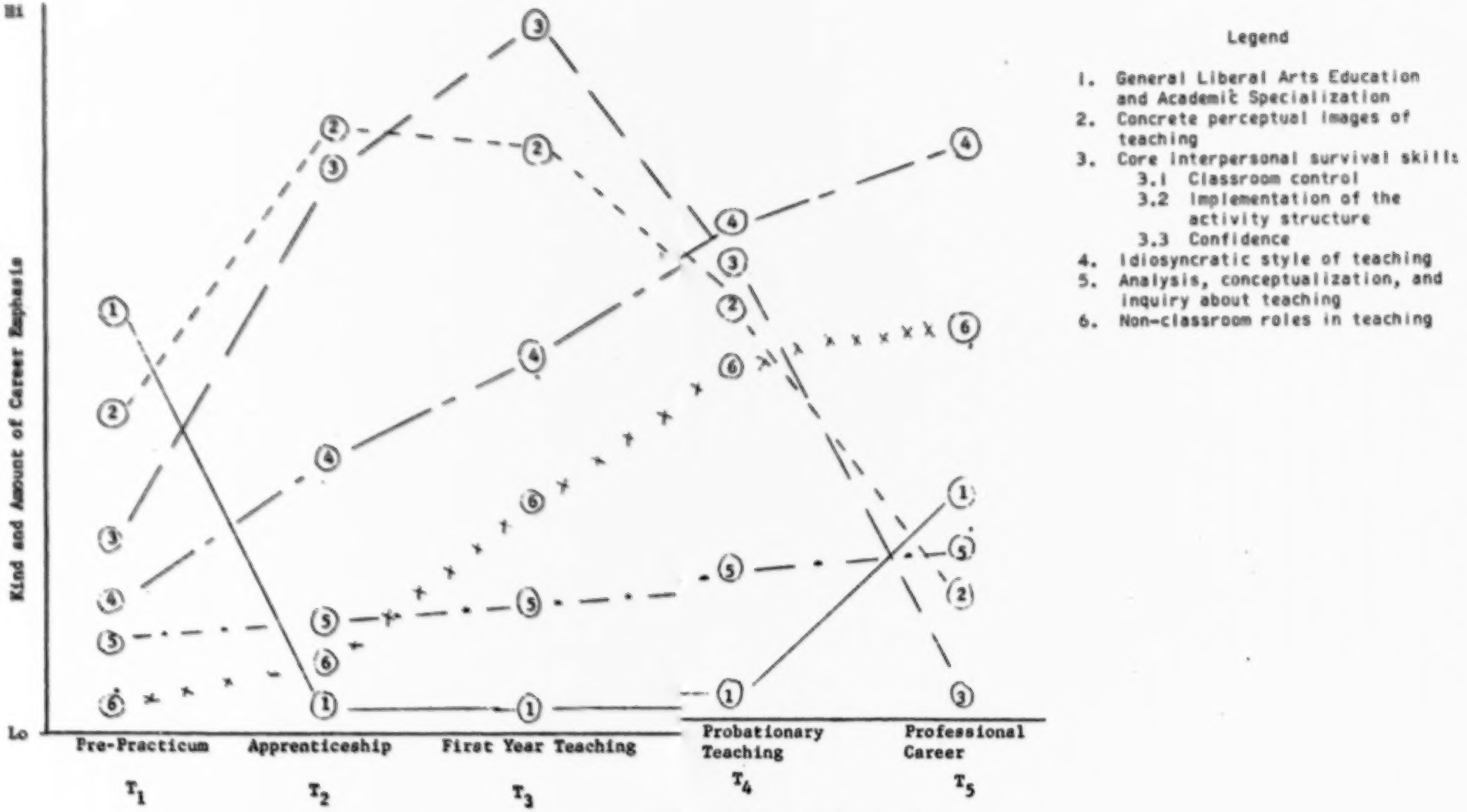

Figure 12 A preliminary model of phases and emphases in developing a professional teacher

period. Training for higher degrees, general maturation, travel and experience should see it rise again and presumably level off during the long years of the professional career. One aspect of this, about which we gathered "an observation" during our apprenticeship study (Connor & Smith, 1967) might be called difficulties in inservice training in the long attempt of teachers to reach a more sophisticated level of performance.

> There was a bit of discussion about a science program in astronomy for seventh and eighth grade teachers. The man who taught it was from Aerospace Inc. and head of their Optics Department. Apparently the whole three hours was over the head of this particular teacher and from the comments that were made about his telling the principal and he in turn calling the instructor, there were a number of other people who thought so also. In this there was a tremendous anti-intellectual flavor. It was of the order that this guy was way above us and impressed us but didn't help us at all. It raises, in part, some of the issues of inservice training and a very difficult job to gear the ideas and the materials to the teachers who then in turn can gear it to the pupils. This teacher saw it as pointless and comparable to the pointlessness of the prior year's "new math" inservice training. (10/7)

The varied possibilities in extending the knowledge and intellectual competencies of teachers are under development in local programs such as these and in federally financed institutes. The latent functions and dysfunctions seem ripe for analysis.

We have made a strong point regarding the development of concrete perceptual images during the apprenticeship, strand two in Figure 12. Presumably this begins before the apprenticeship, reaches a maximum in the practicum and the first year or two of teaching, and drops off over time. In our research the apprentices kept reporting the mundane and the significant events which they had not been privy to before. The perceptions were of children and their families, teachers and classrooms, principals and school organizations. They were many and varied.

A broad category of "core interpersonal survival skills," strand three, seems a major component of the apprenticeship: less important in the prior years, most important in the first year of teaching and hypothetically solved in the probationary period, and of little importance in terms of new learning over the long career period. We analyzed these in great detail earlier and we accented such items as classroom control (the authority structure), implementing the activity structure (initiating and maintaining the instructional program) and the development of confidence in playing the teaching role. These are particularly relevant to the classroom as a social system.

The idiosyncratic styles of teaching, which we have not emphasized explicitly but which we hope are implicit throughout this paper, would be in gradual development from the first experiences in teaching and should continue to blossom long into one's career as new emphases in curriculum, in instructional processes and in the psychological and social foundations arise on the broader scene and as one builds them into or reformulates one's practices. In a fundamental sense the artistry of teaching should be a major focus and satisfaction in the profession of teaching. In our research we obviously do not have direct data on this from our dozen apprentices. More indirectly, the cooperating teachers seemed quite varied in this regard, although our data are not good in that we did not observe them teach to any great extent. Further examination of idiosyncracy as a means and as an objective in a psychology of teaching seems very important.

The analysis and conceptualization of teaching stressed throughout this paper was not accented by the apprentices in our research (Connor & Smith, 1967). The scholar-teacher concept, for good or ill, seemed foreign to many of the people and settings in which our apprentices interacted. The schools seemed to have too many children, too many immediate problems, and too little time for reflection about teaching or curricular innovations. Our apprentices were not inclined in this direction. They defined the task of the semester to get as much practical experience in teaching--presenting lessons-- as possible so that they would be prepared for Thursday, and eventually for next year. The degree to which it is possible--or desirable--to alter the system is, at this point, a matter of speculation, debate and exhortation. Little data exist. Still less data are available when juxtaposed against the value statements.

Finally, strand six, the non-classroom roles in teaching--conferring with parents, working on curriculum committees, playing a role in school and educational organizations--are parts of the career which become important, presumably only as one is a practicing professional. We have suggested that such roles are important in teaching and that social system concepts such as environment, reference groups, external system, normative structure and teacher decision making aid in the theoretical analysis of those day-to-day problems.

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